APRIL | 1957

products finishing

FINISHES ON METAL PRODUCTS

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LEA

ENAMEL, LACQUER and SYNTHETIC COATING STRIPPERS —plus Lea Compounds—have contribute much to the organic finishing field

You know about the many Lea Compositions, both solid and liquid, that are doing such an excellent job of Burring, Buffing & Satin Finishing metal, plastic and wood surfaces.

Lea Products also serve the organic finishing field with equal efficiency and economy. For example:

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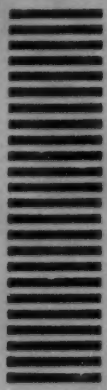

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- **Best grade sisal is bias cut, then bound in top grade bias-cut cotton cloth . . . never frays, never scratches!**
- **Each buffing pad has *extra* fold . . . gives more buffing face, carries more compound on circumference and leading edges.**
- **Ventilated steel center, in 5", 7" and 9" dia. sizes. Note extra row of stitching around center.**
- ***Four rows of stitching*, for strength, longer wear.**
- **Also available with triple sewn buffing pads. Both types come in standard sizes from 12 to 18 inches in diameter.**

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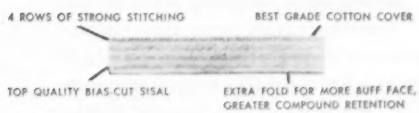
- **Each buff pad made of strong 86/93 cotton—bias cut to prevent fraying, increase wear.**
- **Two rows of stitching—super flexible! Extra row of stitching around center.**
- **Double fold provides greater cutting face, extra compound-holding capacity.**
- **Ventilated steel center has rugged clamping teeth for safety.**
- **Available in standard sizes from 12 to 18 inches in diameter.**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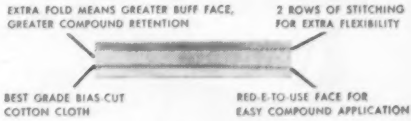
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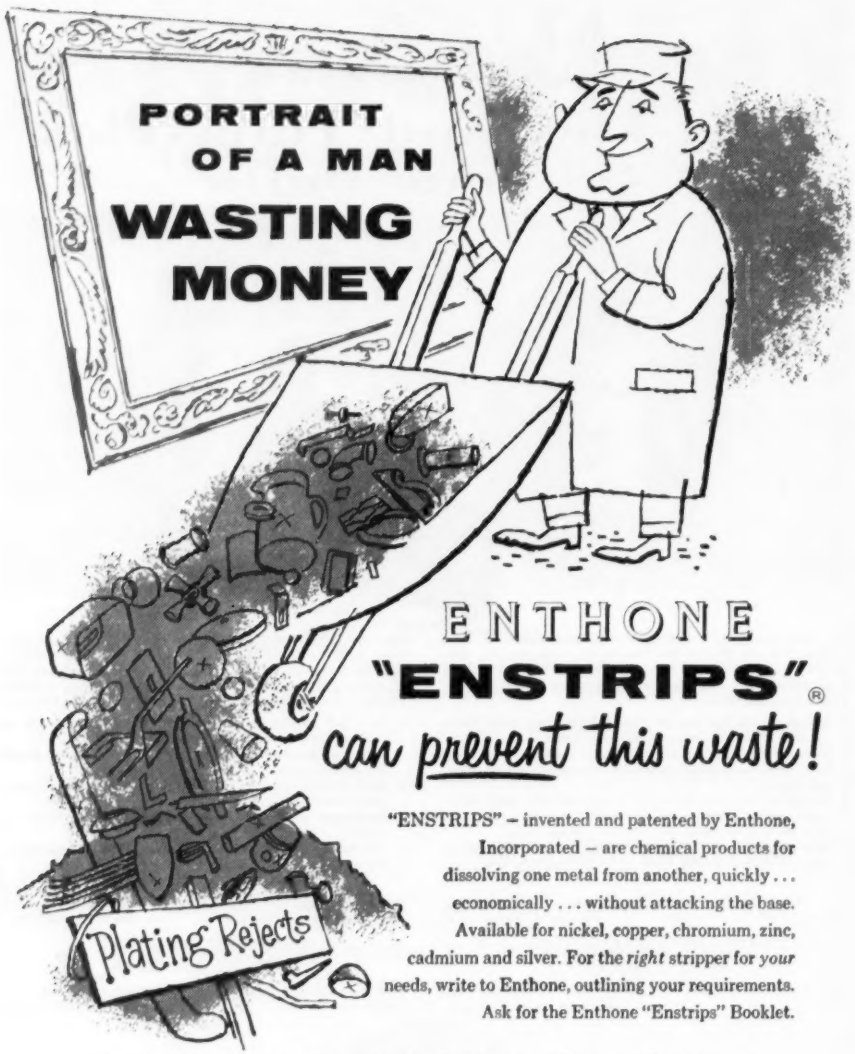

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products finishing

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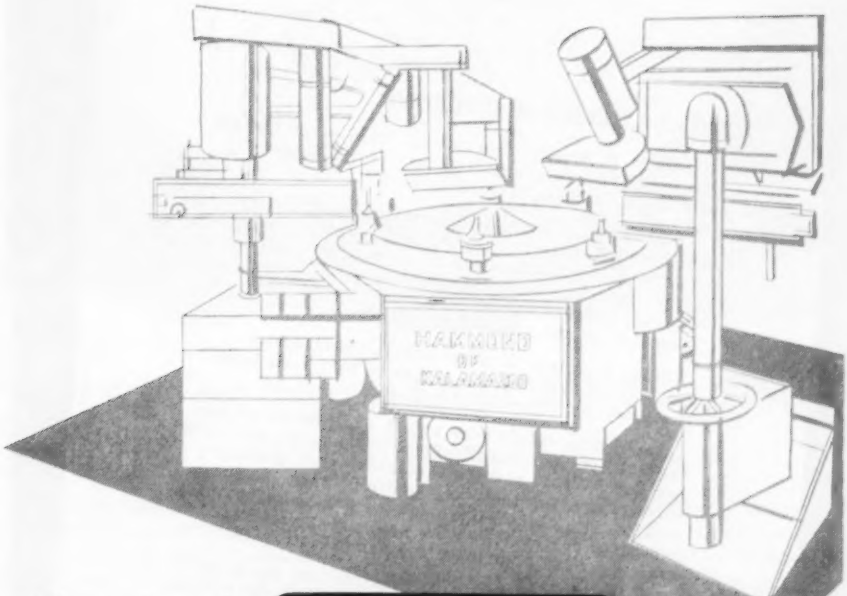

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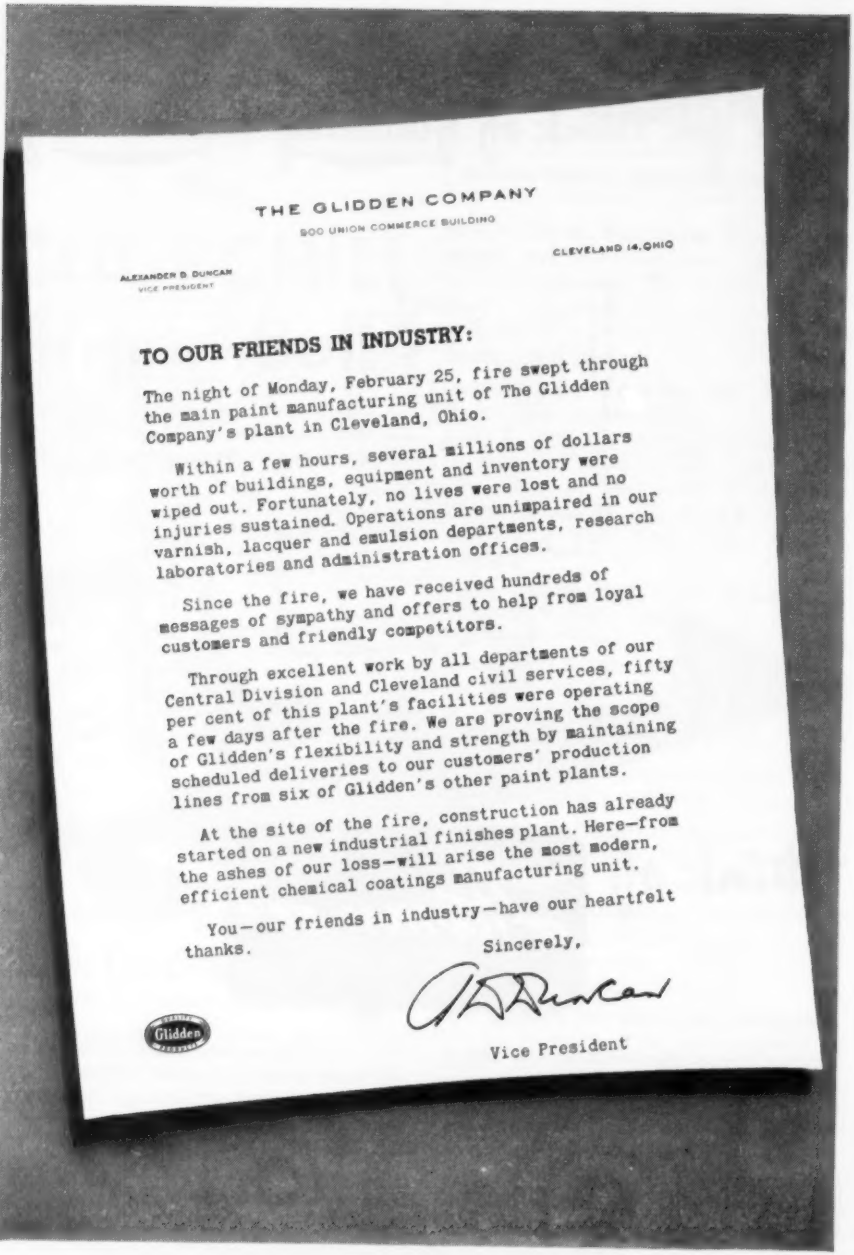

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ALEXANDER D. DUNCAN
VICE PRESIDENT

TO OUR FRIENDS IN INDUSTRY:

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Within a few hours, several millions of dollars worth of buildings, equipment and inventory were wiped out. Fortunately, no lives were lost and no injuries sustained. Operations are unimpaired in our varnish, lacquer and emulsion departments, research laboratories and administration offices.

Since the fire, we have received hundreds of messages of sympathy and offers to help from loyal customers and friendly competitors.

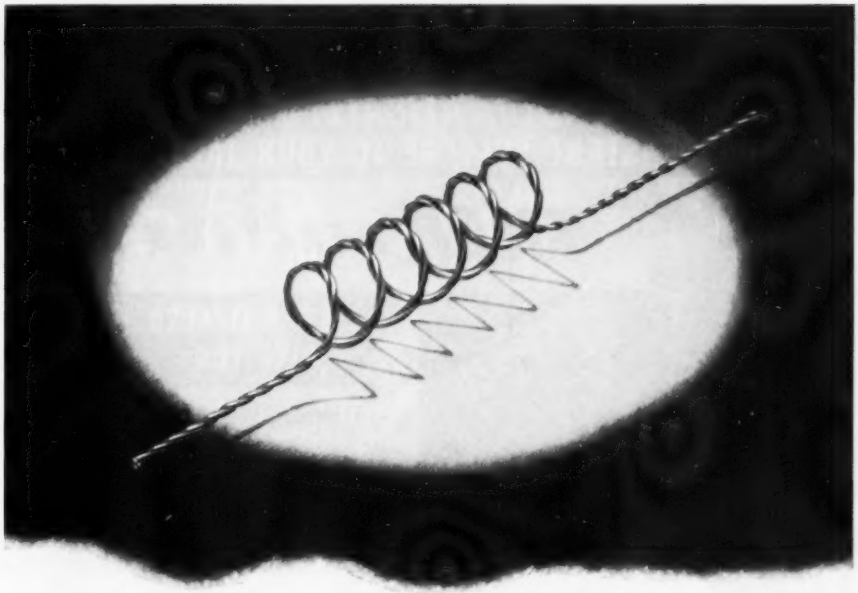
Through excellent work by all departments of our Central Division and Cleveland civil services, fifty per cent of this plant's facilities were operating a few days after the fire. We are proving the scope of Glidden's flexibility and strength by maintaining scheduled deliveries to our customers' production lines from six of Glidden's other paint plants.

At the site of the fire, construction has already started on a new industrial finishes plant. Here—from the ashes of our loss—will arise the most modern, efficient chemical coatings manufacturing unit.

You—our friends in industry—have our heartfelt thanks.

Sincerely,

Vice President



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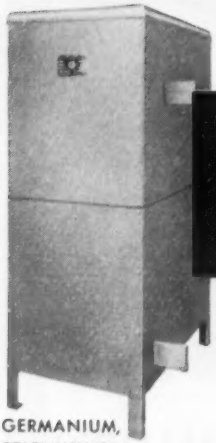

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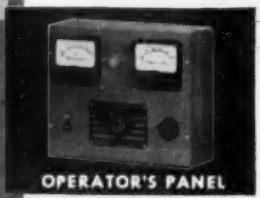

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THER REACTRON DOES!

AND AT LOWER OVERALL COST

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THER REACTRON eliminates tap switches, vacuum tubes, motor driven brushes, arcing contacts, gears and other moving parts.

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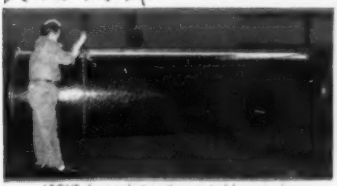
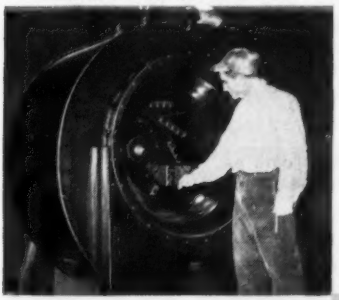


ABOVE: Large duct section coated by spraying with Miccrosol Spray S-2003. BELOW: Fan housing coated by dipping in Miccrosol E-1003.



Developed and manufactured by experienced platers and coaters

Developed originally as a coating for plating racks, Miccrosol E-1003 has all the desirable characteristics which make it an ideal coating for many other applications.

The chemical resistance of Miccrosol is unequalled in its field. Its toughness, abrasion resistance, resilience, and flexibility are unsurpassed. It's easy to apply in either a *dip* or *spray* formula. When necessary, it's easy to repair.

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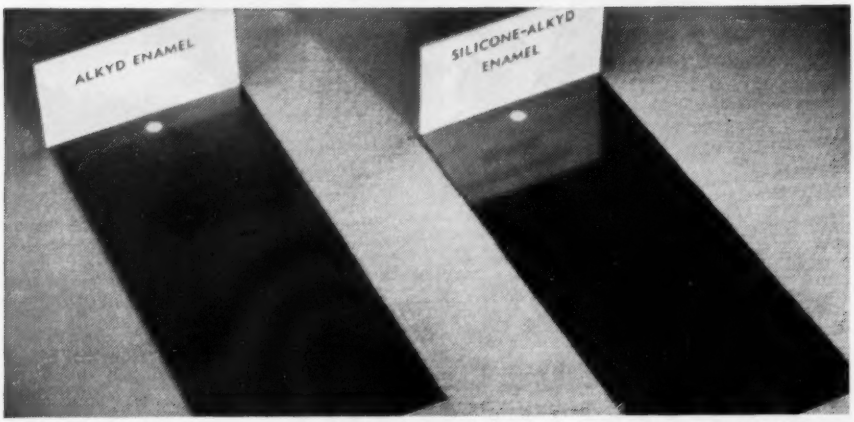
use Silicone Based Paints



Both test panels were exposed in a Weathermeter for 1000 hours; you can see how the silicone based finish on the right has retained its high gloss and mirror-smooth finish.

Here's visual proof of the extra measure of weather resistance you can expect from finishes based on Dow Corning silicone resins. Other advantages are stability at temperatures up to 500 F, depending on formulation; corrosion and mar resistance; color and gloss retention.

Your product will radiate more sales appeal and assure you longer lasting customer satisfaction with a Dow Corning silicone based finish.

LOW COST HAMMER EFFECTS are now easily obtained by specifying the addition of a special Dow Corning silicone fluid to your metallic finish. Full details on request.

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INTER-PROCESS WASHER

- Designed for washing parts between machining operations

● Small in size and BIG in results! Ten of these Ransohoff Cabinet Type Washers were recently shipped to the automatic transmission plant of a big-3 auto manufacturer.

These machines, installed between machining operations, wash parts up to 16″ wide, 12″ high and 30″ long.

Solution tank heated by gas, can be designed for oil, steam or electric heating. Pneumatic door controls interlock with spray system. Complete factory wiring and piping permits quick installation.

Send details of your cleaning requirements for Ransohoff ideas.
Write today: Ransohoff, Inc., 610 N. Fifth Street, Hamilton, Ohio.

Ransohoff *The oldest name... the newest ideas*

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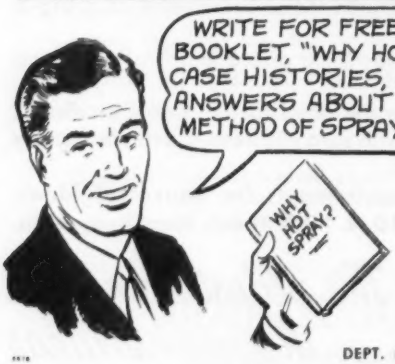
SPEE-FLO

HOT SPRAY MAGIC DOES IT AGAIN!


WRITE FOR FREE, FACT-PACKED BOOKLET, "WHY HOT SPRAY?"..... CASE HISTORIES, QUESTIONS AND ANSWERS ABOUT THIS PROVED METHOD OF SPRAY APPLICATION.
WHY HOT SPRAY?

Based on actual operating experience from Spee-Flo files.

SPEE-FLO

HOT SPRAY HEATERS

DEPT. PF-28 • 720 POLK AVE. • HOUSTON, TEXAS

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Chrome Plate over 3200 Pieces Per Hour with One Operator!

LASALCO's *New* CIRCULAR CHROME PLATER

Cost-cutter . . . time-saver . . . production-booster! Consider the unusual extra profit possibilities with this new high current density, continuously-moving cathode chrome plater:

- Exceptionally high output—3290 pieces, up to 3" long, per hour at 23 seconds. Minimum output, 530 pieces per hour at 2.39 minutes. (Alternate slower drives for heavier plating.)
- One-man loading . . . fully automatic unloading.
- No racks . . . no rack upkeep.
- Easily removable sectionalized cover of Plexiglas, plus easy-to-raise driving mechanism and cathode wheel, gives quick access to coils and anodes. Parts falling into tank are instantly recoverable.
- Simple installation requires only electrical connections and exhaust duct. Plater delivered complete, ready to install.

SPECIFICATIONS

Cathode Wheel Diameters 30". 31 Bronze Work Carriers 3.24" O.C.
Effective Plating Travel 68.4".
Inner Anode Diameter 24"; Outer Anode 40".
Center Of Anode To Cathode 4".
Tank: Diameter 54"; Depth 14".
3/32" Koroseal Lining.
Solution Capacity 115 Gals. 2" From Top.
Anodes: Flat 16 lb. 6% Antimonial Lead—Outer ¼"x9"x7'5"; Inner ¼"x9"x4'4". Anode and Cathode Taps ¼"x2". Copper Bars.
Bused For 500 Amps.
Heating (Standard): ¼" I.D. 6% Antimonial Lead Steam Coil. (Available For Electric Heating.)
Drive: ¼ HP 110/220 1- Phase 60 Cycle AC Motor. Variable Speed Reduction.

Write Now . . . Get The Facts About This Money-Maker

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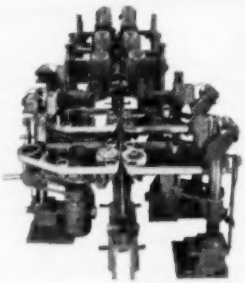
Quality

is consistent when you polish and buff

the *Acme* way!

Acme can build you a polishing and buffing machine to turn out part after part on schedule, and always with the same high quality of finish.

Unusual contours or surface conditions won't stop Acme's specialized engineering talent — they'll build an automatic operation to handle it faster and cheaper. Maybe lack of space is your problem— Acme engineers working with flexible Acme standard units can often add to the number of operations on a single machine and eliminate the need for additional machines on the line. Or perhaps redesigning the indexing cycle to add more polishing or buffing heads on an existing machine can speed up production. Whatever your polishing and buffing problem is, the Acme man can help you.

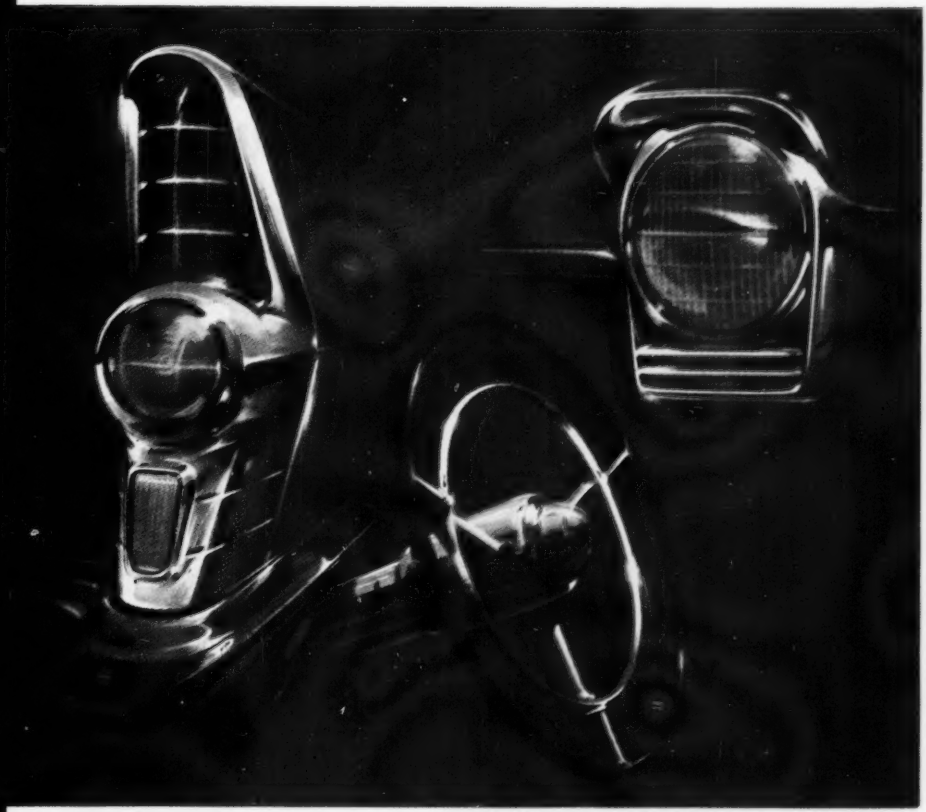


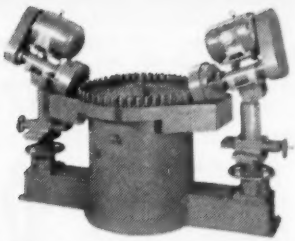
This Acme automatic straight-line machine completely polishes and buffs 1,400 pieces per hour. Four Acme G-3 belt polishing heads with floating back-up wheel and vertical oscillation are followed up by eight Acme G-3 buffing lathes.

LET ACME *Polish Off* YOUR FINISHING PROBLEMS

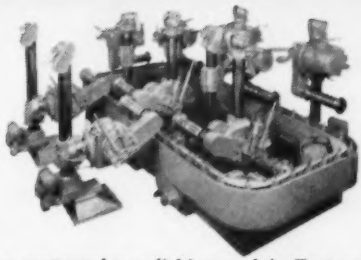
ACME MANUFACTURING COMPANY

LEADING PRODUCERS OF





High volume can be put through this setup, for spot face grinding valve rocker arms. This Acme 36-inch continuous rotary table, with grinding wheel heads having cup wheels, can be quickly adapted to a variety of small castings.



Acme rectangular polishing and buffing machine with eight Acme heavy-duty adjustable floating head lathes equipped with 24" cartridge type spindles. Production can run several thousand pieces per hour.

1400 E. 9 MILE ROAD, DETROIT 20, MICHIGAN

AUTOMATIC POLISHING AND BUFFING EQUIPMENT SINCE 1910

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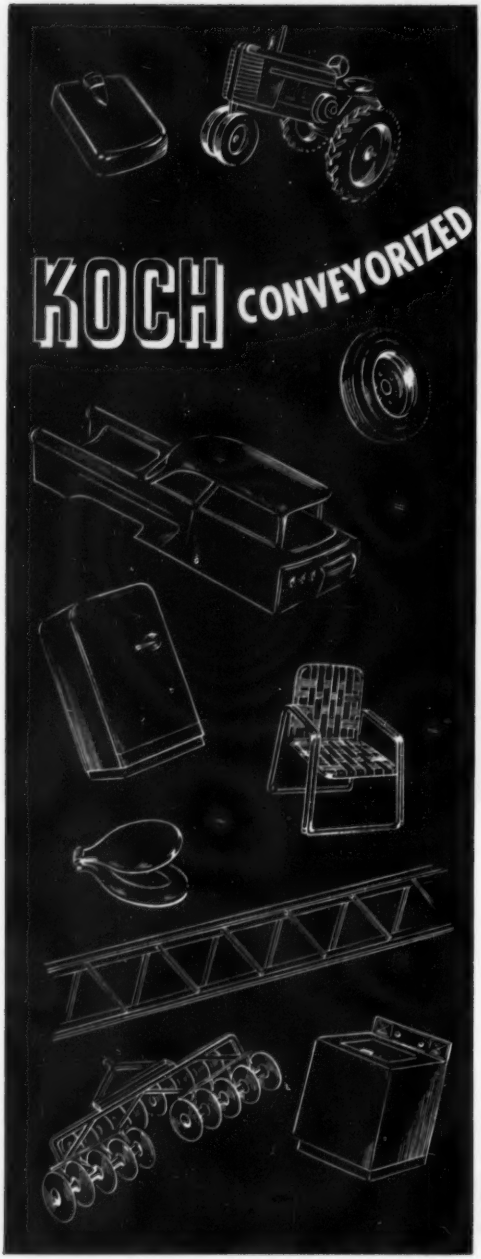

KOCH CONVEYORIZED SYSTEMS ARE USED TO finish almost everything

FROM TRUSSES to transistors, Koch systems move a multitude of products through the most important phase of manufacture . . . *finishing!* Koch Complete Finishing Systems are designed and engineered by experts of long experience. Surface preparation, paint application, in fact all finishing problems are readily solved by Koch Engineers.

Learn how you can improve your production and your product. Write for the Koch story of metal finishing systems . . . case histories of your contemporaries and competitors . . . how *they* profited by installing KOCH COMPLETE FINISHING SYSTEMS.

Master Metalcraftsmen
Since 1873

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KOCH SONS, INC.
EVANSVILLE 4, INDIANA
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In 36 HOURS you'll get an answer to your Paint Stripping Problems when you send them to DuBois' New

Send us eight specimens of the work to be stripped or test panels specially prepared if the work is unwieldy.

Thirty-six hours after receipt of the work, a report will be on the way back to you—by telephone if urgent.

Tag each part with name, date and essential problem details including requirements, as, hot and cold methods, tanks available, etc. Write separately, outlining problem, to whom report should go. No charge or obligation, of course.

The DuBOIS Co., Inc. Cincinnati • Los Angeles New York • Dallas

NEW PAINT STRIPPING CLINIC, CINCINNATI 3, OHIO

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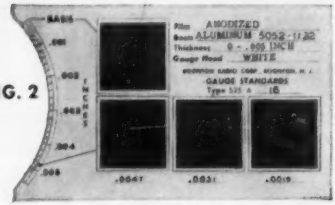
FILM GAUGE



GAUGE STANDARDS
SCALE: ½ ACTUAL SIZE

The Film Gauge, Type 255-A, measures the plating thickness of most non-magnetic metal combinations in addition to those listed. Fig. 1 shows a typical gauge standard for this type of measurement. The Film Gauge also measures non-conductive coatings such as anodic film on aluminum, magnesium, etc. Fig 2 shows a gauge standard for this type of measurement. Gauge standards are available as accessories at extra cost.

For sorting or matching metals by their electrical or magnetic properties, no gauge standard is required. Simply select a sample exhibiting the desired characteristics — establish an arbitrary meter reading — sort and/or match by deviations on the meter.

Price: $450.00 F.O.B. Boonton, N. J.

MEASURES
FILM THICKNESS OF
non-magnetic films on non-magnetic basis metals
SUCH AS:
Silver on Brass
Cadmium on Copper
Silver on 18% Nickel Silver
AND:
Anodic Films on Aluminum (anodized aluminum)
Organic Paints, Porcelain, Enamel, and other non-conductive coatings on Aluminum, Magnesium, etc.

SORTS
METALS
in accordance with their electrical conductivity

MATCHES
METALS
in accordance with their magnetic properties

BOONTON RADIO CORPORATION
Boonton, New Jersey

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Photo Courtesy Rack Processing, Co. Dayton, Ohio

Which coating's worth looking into?

Unichrome Coating 218X, of course

NOTHING BEATS plastisol for rack insulation. Platers who really investigate, choose Coating 218X. For they find this coating backed by *10 years* untroubled service experience. They see cases where coating service exceeded 6 years of daily use! No question that Coating 218X survives in *all* plating solutions, contaminates *none*. Even vapor degreasing cycles don't harm its free-rinsing slick surface. *Using the best quality at the outset saves money in the long run.*

If you'd rather have an outside firm apply Coating 218X for you, we'll name a skilled specialist nearby.

First name in plastisols for all plating purposes . . .

UNICHROME

METAL & THERMIT CORPORATION

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In Canada: Metal & Thermit-United Chromium of Canada, Limited, Rexdale, Ont.

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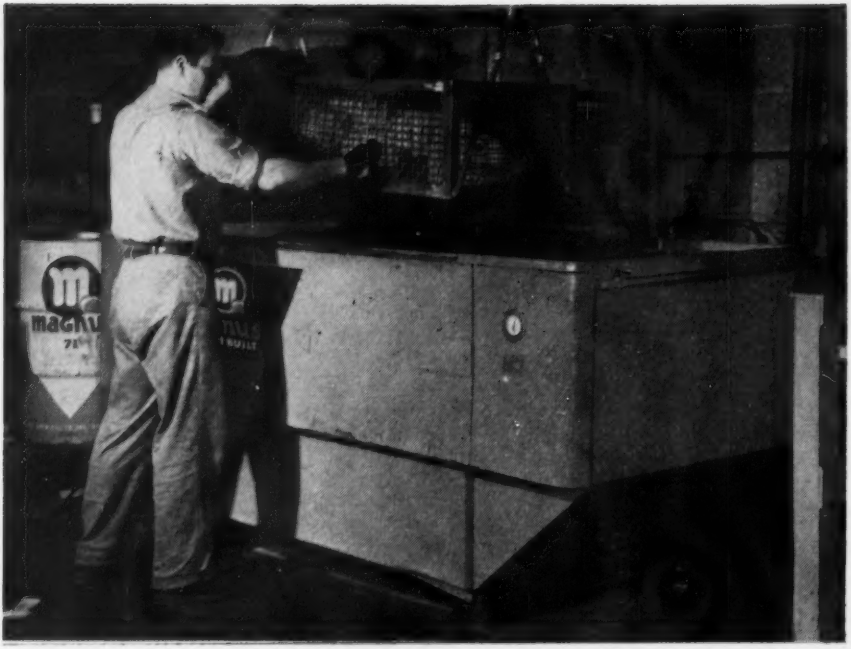

PARTS CLEANED AND PROTECTED AT ½ COST! ¼ LABOR!

Cleaning primed cast-iron housings and gear cases can make a dramatic success story as shown by this case history of a major midwest lift truck manufacturer.

. . . formerly, cleaning was a full time job for TWO men using solvent and hand wiping. FOUR drums of solvent were used per month.

. . . with the installation of a Magnus Aja-Dip cleaning machine using Magnus No. 71 cleaning compound, ONE man ,working 2 to 3 days a week, easily keeps ahead of production. One drum of Magnus 71 lasts an average of three months. The castings are completely cleaned of all soils without harm to the primer and protected against subsequent rusting.

MAGNUS METHODS are designed for your production line efficiency. For information write MAGNUS, 208 South Avenue, Garwood, New Jersey.

magnus

Industrial Cleaning Division

MAGNUS CHEMICAL CO., INC.

—a world-wide organization specializing in cleaning and protection of all surfaces.

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"BUCKY" offers you FREE!

a TRIAL BAR of K260G

STAINLESS STEEL BUFFING COMPOSITION

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OUTSTANDING FOR CUT AND COLOR IN ONE OPERATION WITH SISAL BUFFS

The BUCKINGHAM PRODUCTS CO.

POLISHING and BUFFING COMPOSITIONS

14100 FULLERTON AVE, DETROIT 27, MICH.

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Facts to consider when you're buying

Chromate Conversion Coatings

for Corrosion Protection, Paint Base, Decorative Finishing

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002″ max.) gel-like, complex chromate film of a nonporous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

If your company is manufacturing or buying parts or complete assemblies made from or plated with any of the more common non-ferrous metals—zinc, cadmium, aluminum, magnesium, silver, copper, brass or bronze—you've probably already run up against the question of finishing these surfaces with a chromate conversion coating. These coatings are used to protect against corrosion, or to provide a base for paint or to provide a decorative finish for sales appeal or shelf life. Since chromate conversion coatings represent a relatively new means of obtaining these finishes, this digest of facts to consider may be of value to you.

1. THE COATINGS THEMSELVES. There are many brands on the market. All are similar in many ways. Each, of course, offers its own specific advantages and these may relate to operating techniques, performance under actual use conditions, cost, availability, etc. Naturally, you'll want to choose a coating that is widely known and accepted under both military and civilian specifications.

2. THE COMPANY BEHIND THE PRODUCT. Is it a reliable, established organization? Does it offer experienced technical service, both from the field-engineering organization as well as the home office and laboratories? The man who sells and services your installation should be thoroughly familiar with not only chromate conversion coatings and their applications, but also with the characteristics and performance of related finishing operations such as pre-cleaning, electroplating, painting, etc. This is most important since all steps of the finishing cycle must be functioning

properly for the satisfactory performance of the ultimate finish produced.

3. AVAILABILITY OF THE PRODUCT. Ideally, of course, the material should be readily available to you from nearby warehouses to avoid time loss in long distance shipping and to provide emergency service, should the need arise.

4. COST. Naturally, the initial price of the material is important to you. However, just as you consider ultimate cost when you are buying mechanical equipment, ultimate cost must be considered for these finishing chemicals. So, it will pay you to investigate consumption costs, labor costs and the other factors which go into the determination of ultimate cost. Further, cost alone gives no indication of product performance, so careful attention must be given to the purpose the finish must serve and the value that finish will add to your product.

5. FACILITIES FOR RESEARCH AND DEVELOPMENT. Perhaps the existing types of chromate conversion coatings do not include a compound that will accomplish exactly what you wish. Then, it is important to deal with a supplier who has adequate research and development facilities available to work with you to produce a material to meet your needs. Naturally, such a project is seldom completed overnight. But, with complete cooperation and confidence from both you and your supplier, chances are a satisfactory program can be completed.

These are the concepts of sales and service on which we, Allied Research Products, Incorporated, have developed and marketed the line of Iridite chromate conversion coatings . . . superior product performance, complete sales and technical service, easy product availability, economical cost, extensive research and development facilities. No doubt you are familiar with our line and have seen this trademark—

IRIDITE®

—in our advertising, technical literature or on shipping containers in your plant. Remember this trademark when you're buying or investigating chromate conversion coatings for your company. It's your assurance of quality, economical products from a reliable and established company, skilled sales and technical service from both our home office and a national network of representatives, immediate availability from warehouses in strategic industrial areas and our willingness to work with you to develop new finishes to meet your needs, should the present line fall short.

For complete information on Iridite chromate conversion coatings, write today for your free copy of our technical data file. Or, for immediate advice, call in your Allied Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

Manufacturers of Iridite chromate conversion coatings for corrosion resistance, paint systems, final finishing of non-ferrous metals; ARP Plating Brightener & Chemicals.
West Coast Licensee—L. H. Butcher Co.
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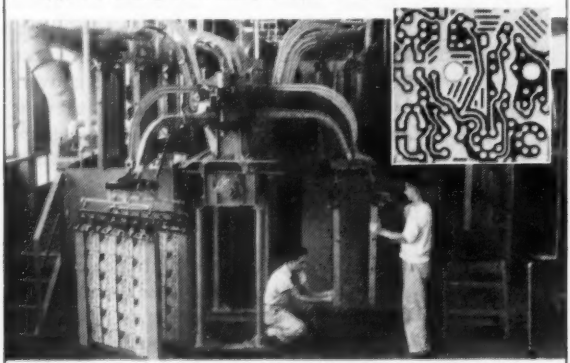
THE FINISHING TOUCH

A. B. HOEFER, *Vice-President*, FREDERIC B. STEVENS, INC.

STEVENS MACHINE SPEEDS PRODUCTION OF PLATED CIRCUITS

POSSIBLY ONE OF THE BIGGEST TECHNOLOGICAL ADVANCES in methods and materials for the assembly of electronic equipment is proving to be electrically conductive lines of copper, plated to uniform thicknesses on a plastic circuit board. Stevens is proud to be playing a part in this advancement.

ONE LARGE MANUFACTURER IS OBTAINING 2,880 PLATED CIRCUITS an hour with a Stevens Automatic Rack Type Processing and Plating Machine. The machine carries two



Stevens Automatic Processing and Plating Machine used for copper plating circuits at General Electric Company, Auburn, New York.

racks per arm, with each rack holding twenty-four circuits in position for plating. The results, beside the high production, are uniformity and "sure-fire" conductivity.

ANOTHER ADVANTAGE OF THE PLATED CIRCUITS is the "plated through" holes or eyelets which form a mechanical bond to the circuits on both sides of the base and also eliminate connective wiring of the two circuits.

Our engineers are constantly working toward the development of new ideas in plating and metal finishing. Why not let us help you in such problems as plating, anodizing, pickling, cleaning, electro-cleaning, phosphating, stripping, lubriting and other types of immersion processing. Write Frederic B. Stevens, Inc., 1804 Eighteenth Street, Detroit 16, Michigan.

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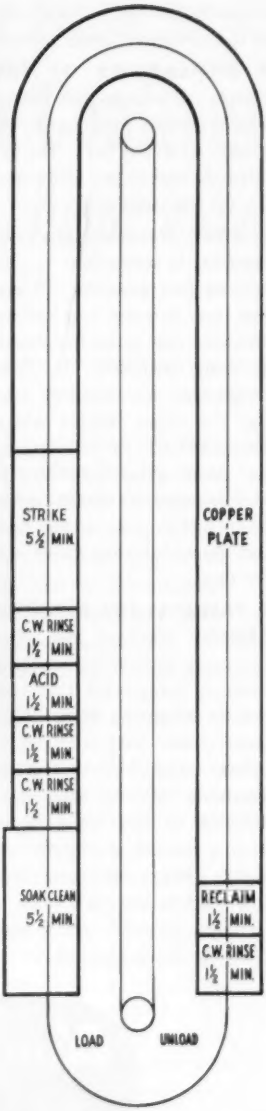
STEVENS 75 YEARS OF SERVICE

WAREHOUSES AND OFFICES IN PRINCIPAL CITIES



Suggested cycle for automatic plating or forming of plated circuits.

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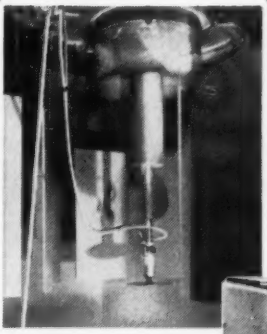
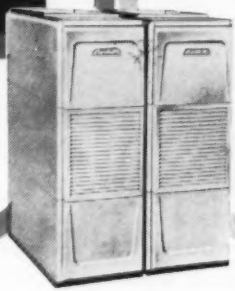
NO REASON WHY YOU CAN'T DO IT, TOO!



Typical of the Mueller Climatrol line is this summer air conditioner and gas-fired winter air conditioner, now uniformly painted electrostatically with RANSBURG NO. 2 PROCESS



MUELLER CLIMATROL,

Milwaukee, increases paint mileage 40% with

RANSBURG NO. 2 PROCESS

And, 10 men averaging 40 hours a week now do the work formerly handled by 24 men averaging 50 hours!

Painting used to be a bottleneck in the manufacture of heating and air conditioning equipment at Mueller Climatrol.

But not any more!

When Mueller modernized its finishing department—replacing hand spray with Ransburg No. 2 Process Electro-Spray—daily production was increased . . . finishing costs were cut . . . and quality of the work was improved.

Annually, Mueller coats over 10 million square feet of sheet metal, so a 40% increase in paint mileage—translated into paint dollars saved—is a sizeable figure. Pointing up other savings, a typical run of 400 furnace casings used to take 200 man hours to clean and hand spray. Mueller does it now in 60 hours!

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product, if your production justifies conveyorized painting, chances are one of the Ransburg Electro-Coating Processes can do it better, for less, with improved uniformity and quality of the work. Write for our new brochure which includes numerous examples of both large and small manufacturers of a variety of products who are enjoying the many advantages of *Ransburg Electrostatic Spray Painting.*

Ransburg **ELECTRO-COATING CORP.**

Indianapolis 7, Indiana

RANSBURG

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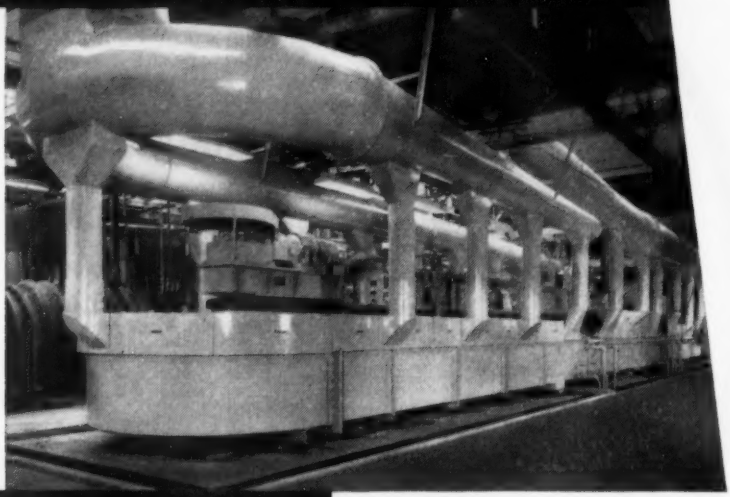
KIRK & BLUM FUME CONTROL SYSTEMS
protect personnel and equipment



Saves 5 Ways...

1. Reduces Air Volume • 2. Lowers Maintenance Costs
3. Cuts Replacement Costs • 4. Improves Working Conditions
5. Eliminates Damage to Equipment

Many manufacturers throughout the nation rely on fume control systems engineered, fabricated and installed by KIRK & BLUM to protect personnel and equipment from damaging fumes.

In this installation the fumes are picked up at the outer periphery of the tank. Therefore, only clean air passes over the centrally located conveyor and plating equipment.

A KIRK & BLUM fume control system will soon prove itself with substantial savings in operating costs, as well as increasing life of vital equipment.

Write for Booklet "F" showing typical installations.

The KIRK & BLUM MFG. CO., 3116 Forrer Street, Cincinnati 9, Ohio

KIRK & BLUM FUME CONTROL SYSTEMS

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Experience

WATSON-STANDARD'S EXPERIENCE IN FORMULATING SPECIALIZED COATINGS IS INVALUABLE TO METAL FINISHERS

If your product includes metal finishing in its manufacture, it is wise to consult the Watson-Standard Laboratories on your coating problems. The services of our laboratory and field technicians are available without obligation.

"Knowledge, skill and technique through EXPERIENCE"

Watson-Standard Co.

225 Galveston Ave., Pittsburgh 30, Pa.

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W-S FINE FINISHES

INDUSTRIAL FINISHES • PAINTS • PLASTICS • CHEMICALS

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Always big enough to get the parts clean. Never big enough to choke the flow in your washing machine

with

Cowles NEW QC WASHING MACHINE CLEANER

It's alkaline—but *more* than an alkali. NOW—for the first time—you can use

REINFORCED CLEANING

added wetting, penetrating, soil-loosening, emulsifying power in your washing machine

without excessive foaming

Get the complete story on this *brand* new Cowles QC Washing Machine CLEANER

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APRIL, 1957

editorial

Are You Producing Quality Plating?

For the past thirty years technical men and executives alike have looked forward to the day when bright electroplates of most, if not all, metals could be produced with a minimum of polishing or buffing. All have worked to make that day a reality. Today, completely automatic plating installations, which produce bright plated parts without intermediate buffing, are quite common.

Standards of quality and specifications have, in part, been established on the basis of deposit thickness. It is not too difficult to calculate cycle times, current densities, etc., so that a fully automatic plating system will produce parts having the desired thickness specifications.

Recent research has tended to indicate, however, that it is difficult to predict the corrosion resistance or performance of a plated coating on the basis of deposit thickness. Also, it is often difficult to duplicate results from ostensibly duplicate conditions of deposition. Further, and perhaps more pertinent, is the indication that the porosity of deposits has more to do with early failure than a thin plate.

One of the points that H. Leroy Beaver stresses over and over in his articles on "Barrel Finishing" is the value of barrel finishing to close the pores in an electroplate. Of course this application is somewhat limited.

Buffing of electrodeposits, while it removes some of the metal, flows the plated metal and tends to make the resulting surface less porous. Another look at finishing process cycles may be in order. Perhaps a copper and/or nickel buffing operation in the copper-nickel-chromium combination would result in a more corrosion-resistant deposit. Such an operation might also compensate for the results brought about by poor basis metal surface structure.

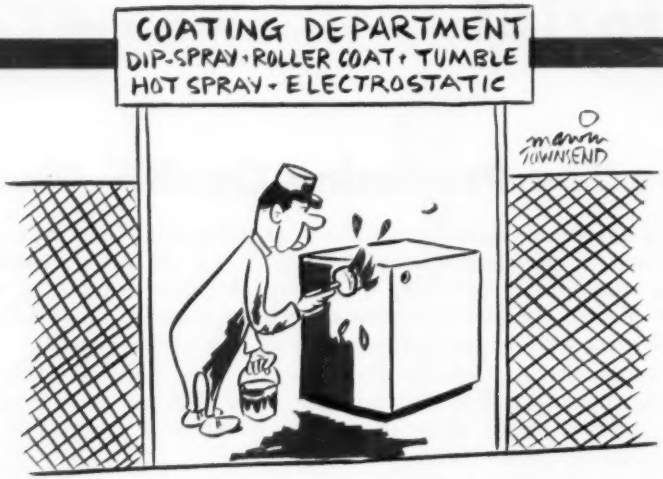
The new Corrodkote Test (PRODUCTS FINISHING, January, 1957, pages 30, 31) provides in 24 hours an indication that a part will or will not be likely to fail in automotive service. Thus, some estimate of the value of a buffing operation can be made before the parts or products are delivered to the customer.

And, as we all know, satisfied customers are essential to the health of the industry.

Ezra A. Blount

—EDITOR

A Survey of Paint



Part II: Conveyorized Spray Finishing; Automatic Spraying; Electrostatic Spray Painting

By EZRA A. BLOUNT
Editor

Products feature finishing

THE FINISHING INDUSTRY was not far behind the automobile industry in becoming conveyorized. With the development of relatively quick drying lacquers, it became obvious that automobiles could not only be assembled on a conveyor line, but that a similar technique could be applied to the paint finishing process. At first, the products to be sprayed were conveyed by either overhead or floor conveyors past the spray operators, where primers, lacquers, or enamels were applied. Figures 1, 2 and 3 are illustrations of that method of paint application.

Although these photos all show installations which employ overhead monorail conveyors, wire belt continuous conveyors and pallet-

Application Methods

type conveyors are also used. The latter two bring the parts to be sprayed past the operator's spray station at waist level. Figure 1 also illustrates the use of conveyorized spraying in combination with a final electrostatic spray finishing operation. There are many applications for this combination of the two finishing methods.

Since conveyors can be set to move at a predetermined rate of speed, and other conditions can be controlled, automatic spraying devices have been developed to mechanize this finishing process. Thus one operator can control several spray stations or machines instead of just one spray gun.

Certain features of automatic spray gun installations increase the operating efficiency of the setups. One development is designed to move spray guns in synchronization with an article being sprayed, returning the guns to a starting po-

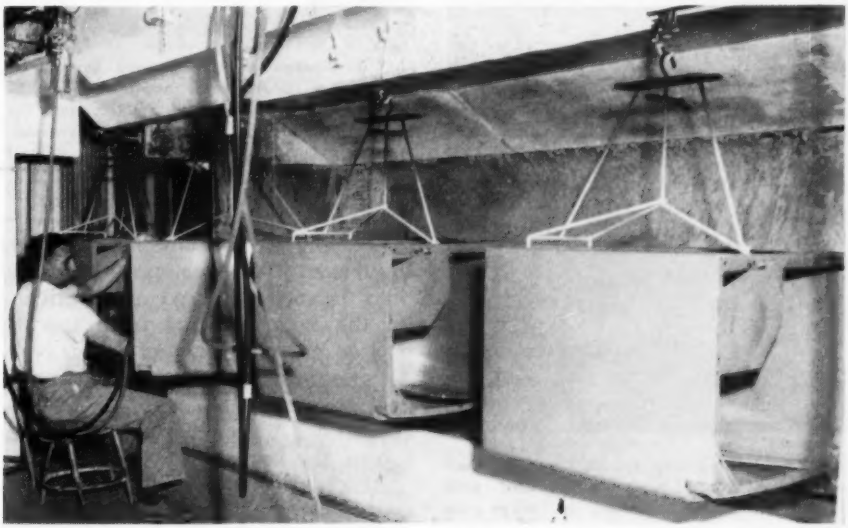


Fig. 1—Spray operator reinforces interior edges, corners and other shielded areas of automatic washer cabinets as they move past him on an overhead transport conveyor in the plant of Whirlpool-Seeger Corporation. (Photograph by PRODUCTS FINISHING.)

"A signaling device can be set to actuate spray guns when an article or part is present on the spray finishing conveyor."

sition so that another article can be coated in the same manner. Positive, rapid return movement of the spray guns to the starting position is essential. A signaling device can be set to actuate spray guns when an article or part is present on the spray finishing conveyor. If a conveyor hanger is not loaded, the device will not cause the spray gun to operate.

Figure 4 is a view of an automatic spray finishing installation called a contour-following spray setup. Automobile bodies are drawn past the spray gun on a floor conveyor. During the time required for the body to pass the spray gun, the body is spray painted automatically, the gun traveling from top to bottom of its curved arc of travel. Another gun, used in the same manner, sprays the other side of the car body. A third gun sprays the top of the body.

Fig. 3—Spray operator in one section of two-section spray booth applies primer to cleaned and phosphatized steel panels for air conditioners at Carrier Corp., Syracuse, N. Y. (PRODUCTS FINISHING Staff Photo.)

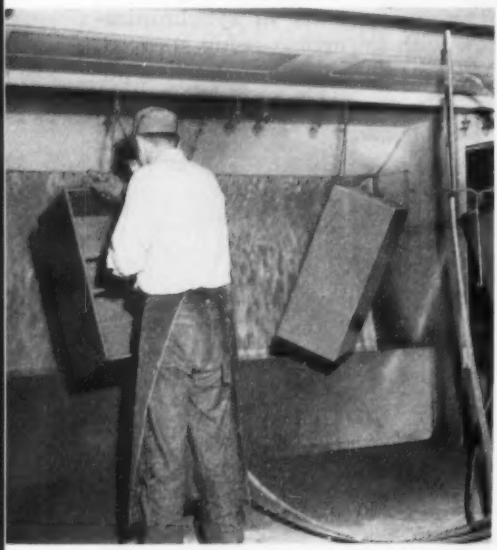


Fig. 2 — Filing-case cabinets are finished with gray enamel on interiors and gray wrinkle finish on exteriors as they pass through this two-station water-wash spray booth. Conveyorized finishing system is in Worcester, Mass., plant of The Wright Line, Inc. (Photograph by PRODUCTS FINISHING.)

Automatic spray painting of washing machine tubs can be accomplished with the setup shown in Fig. 5. The working-level transport conveyor travels at approximately

". . . tubs rotate so that a uniform coating can be deposited over the entire surface."

Fig. 4—Contour-following automatic spray setup. Spray gun oscillates up and down curved track to paint side of auto body as it passes spray station on floor conveyor. (Courtesy The DeVilbiss Co., Toledo 1, Ohio.)

12 feet per minute. As the washer tubs pass the automatic reciprocating spray painting machine, the tubs rotate so that a uniform coating can be deposited over the entire surface. The automatic spray painting machine, which is fitted with two spray guns, can be fitted with one, two, or four guns. The guns are mounted on a reciprocating or oscillating base that can be adjusted to have from a 24-inch horizontal stroke to a 144-inch stroke. Thus the guns follow the tubs during a spray cycle, returning to a starting position to begin the next cycle.

For automatic spraying of flat sheets on a wire belt or cross-rod conveyor, either a set of two spray guns mounted on an oscillating mechanism, or the rotary spray painting unit illustrated in Fig. 6 can be used. When automatic reciprocating machines are used, the spray guns are mounted perpendicularly above the path of the flatware conveyor, and the guns move back and forth in a straight line at right angles to the conveyor belt. By controlling the speed of oscillation of the guns in accordance with the

"You ruin 3 guns in a row—whatcha expect?"

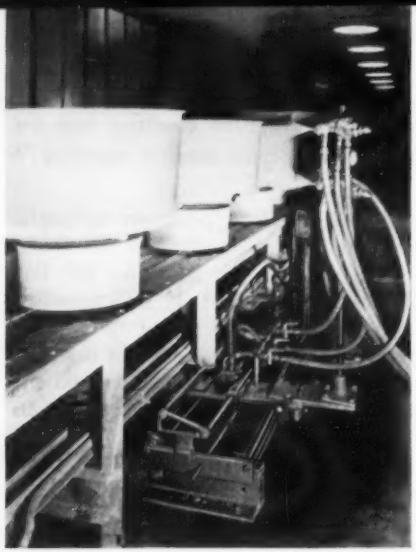


Fig. 5—Tubs mounted on conveyor traveling at 12 f.p.m. are sprayed automatically by reciprocating spray machine. (Photograph courtesy Binks Mfg. Co., Chicago, Illinois.)

speed of the flatware conveyor, the thickness of sprayed film can be regulated.

The rotary spray machine (Fig. 6) consists of four rotating arms mounted on a revolving vertical spindle. An automatic spray gun is mounted on each of the four arms. The guns travel in a circular path above the conveyor. The diameter of the circle traveled by the spray guns is approximately 24 inches wider than the maximum width of the ware to be sprayed. For example, if the flat ware is 30 inches wide, the guns travel a circle 54 inches in diameter.

The guns operate only when they are directly over the ware. Each gun turns on automatically when it

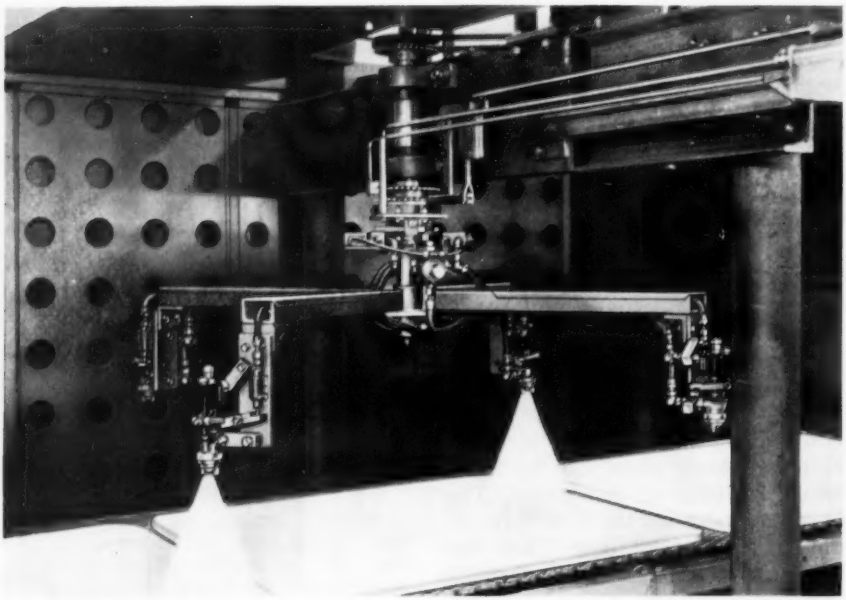


Fig. 6—Rotary spray painting unit consists of rotary fixture containing four spray guns rotating above the conveyor. (Photograph courtesy Binks Mfg. Co., Chicago 12, Illinois.)

"Uniform results have been obtained with a conveyor speed as high as 100 feet per minute."

approaches the edge of the product and shuts off as it leaves the product. The distance between the points where the spray turns on and off is called the "spray width," and it can be adjusted for various product sizes while the machine is in operation. The amount of finish applied to the surface to be coated can be controlled by varying the speed of the rotary spray head. Uniform results have been obtained with a conveyor speed as high as 100 feet per minute.

Several types of automatic spray painting machines developed for smaller or for specialized finishing installations are illustrated in Figs. 7, 8 and 9. The machine shown in Fig. 7 can be installed in any type of spray booth so that the operator may load and unload the work stations from the front of the spray booth. The rotating turntable carries the products to be spray coated into the back of the booth, where they are spray painted automatically. Further rotation of the turntable brings the painted articles to the operator, who removes them from the machine. Speed of rotation of the turntable can be adjusted according to the size of the product being finished. As can be noted in

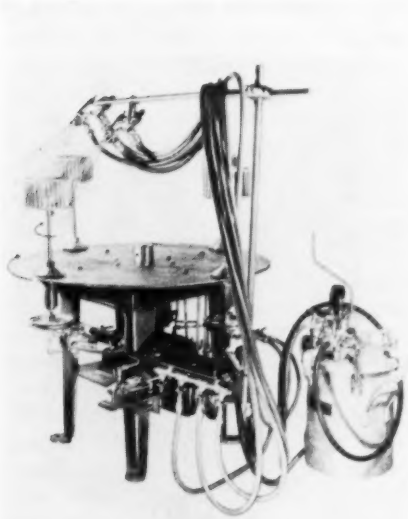


Fig. 7—Automatic rotary turntable spraying unit. (Photo courtesy J. Holland & Sons, Inc.)

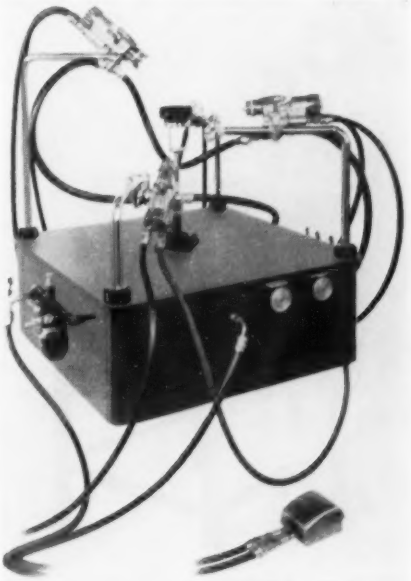


Fig. 8 — Automatic, single-spindle painting machine. (Courtesy Conforming Matrix Corp.)

the illustration, each individual work station or mount rotates so that the part may be evenly coated on all surfaces.

An automatic, single-spindle painting machine is illustrated in Fig. 8. This machine may be set up easily and installed in any spray booth fitted with the necessary working-level bottom or supporting frame. One dial of the machine regulates the speed of the spindle (varying from 100 to 400 r.p.m.) upon which the part to be spray painted is mounted. A second dial controls the spray cycle—the length of time the spray guns operate. The spindle and guns go into action at the touch of the foot pedal—leaving the operator's hands free to load and unload—and stop automatically upon completion of the preset painting cycle. The speed of operation is dependent upon the loading time required. As many as four spray guns, one on each corner of the machine, may be used as the simplicity or complexity of the work requires.

An automatic spray painting unit, complete with spray guns, spray booth, and paint pressure tank, is illustrated in Fig. 9. The automatic rotary-indexing machine may be air operated, or the indexing table may be fitted with an electric motor Geneva drive. The machine has 24 workholders and indexes 12 times per complete revolution of the table. The rocket heads shown are painted on the inside, two at a time. The speed of the painting stroke may be regulated by a convenient dial. The speed of

Fig. 9 — Automatic rotary-indexing spray painting machine set up with two spray heads to spray rocket-head interiors. (Photo courtesy Conforming Matrix Corporation.)

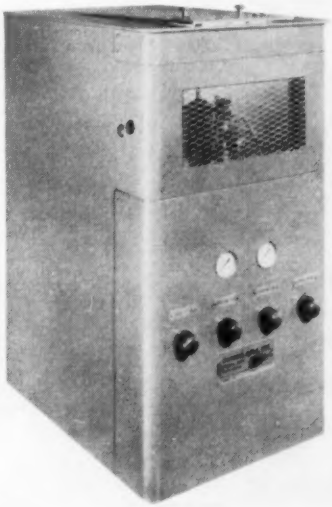


Fig. 10 — Oscillating gun pressure contact spray-decorating machine designed for painting through an integral mask. (Photo courtesy Conforming Matrix Corp., Toledo 2, Ohio.)

indexing can be controlled by another dial to paint from 400 to 1,200 pieces per hour. By simple changes in construction, the machine can be used for 4-, 6-, 8-, 12-, or 24-station indexes, or for continuous movement past spray guns.

Two types of self-contained spray painting machines are shown in Figs. 10 and 11. The machine shown in Fig. 10 is an oscillating gun, pressure-contact spray-decorating machine. The spray gun mounted inside the machine operates in a concave arc, or pendulum-type swing, so that it can coat the outside of convex areas. The spray-decorating machine is designed for painting areas up to 3 inches by 6 inches. The gun oscillates continuously to paint either a concave surface, such as the inside of a horn button, or a convex surface, such as the exterior of an irregular casting or formed product.

The arc described by the gun can be adjusted to suit the nature and size of the part. The machine may also be operated with the gun in a stationary position. The part to be sprayed is painted through a specially designed mask which is mounted in the top of the machine. When the part to be painted is placed in the mask and the table top depressed slightly, the spray gun is actuated, and the painting performed. The operator merely loads and unloads the machine.

The spray painting machine is self-contained, completely enclosed, and has a built-in plenum chamber. Working parts are completely covered and cannot become contaminated by overspray. There is a built-in air exhaust outlet sufficient to handle 900 c.f.m. Air is drawn across and under the top of the machine from the front, and exhausted from the rear.

A further development of the automatic spray decorating machine is shown in Fig. 11. This machine is fitted with air hold-down pistons, and can be adjusted for any desired variation in dwell time, loading time, and gun spraying time. The machine can paint with a stroke from zero to 24 inches. A production of 600 units per hour can be secured from the spray painting machine.

Fig. 11—Automatic spray-decorating machine electrically dial controlled for loading time and spraying time. (Photograph courtesy Conforming Matrix Corp., Toledo 2, Ohio.)

Electrostatic Spraying

Somewhat more than twenty years ago, it was discovered that atomized paint particles, sprayed into a highly charged electrostatic field, would produce an even coat on all sides of a round object placed in the field with a minimum of paint loss through overspray. This process, known as the electrostatic spray process, is particularly suited to conveyorized finishing systems.

One type of electrostatic spray system is illustrated in Fig. 12. This installation is used for painting refrigerator doors in the plant of Amana Refrigeration, Inc., Amana, Iowa. The paint particles are charged by the inverted U-shaped grid and are attracted to the metal freezer door (grounded through the conveyor) where they are deposited in a smooth film. The spray guns may be adjusted according to the conveyor speed. They will operate with little or no further attention.

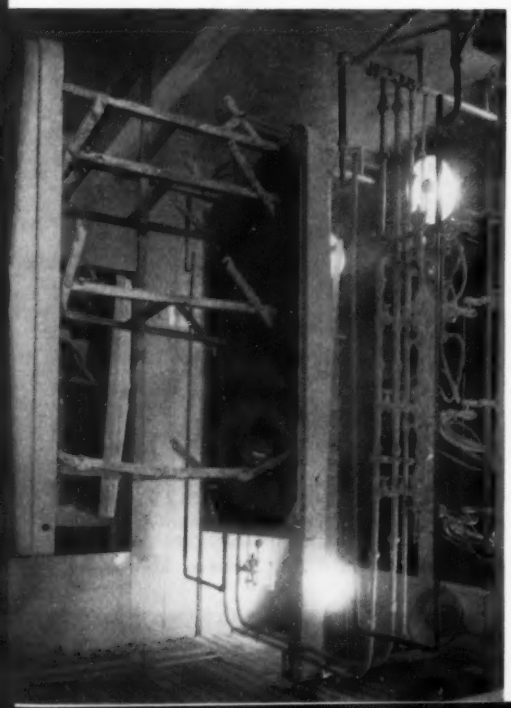


Fig. 12—Either two or four spray guns are used in this electrostatic-spray installation. (Photo courtesy Amana Refrigeration, Inc.)

Parts are tack-wiped in a pressurized room just before entering the Ashdee electrostatic installation. The ware passes through two staggered electrostatic spray booths (one of which is shown in Fig. 12). Each booth sprays two passes on its respective side. Conventional Binks automatic spray guns are used, reciprocating in a vertical plane, and spraying perpendicularly to the conveyor through ionizing electrodes. A 100,000-volt transformer-rectifier unit energizes the electrodes, electrically charging the paint particles, which are at-

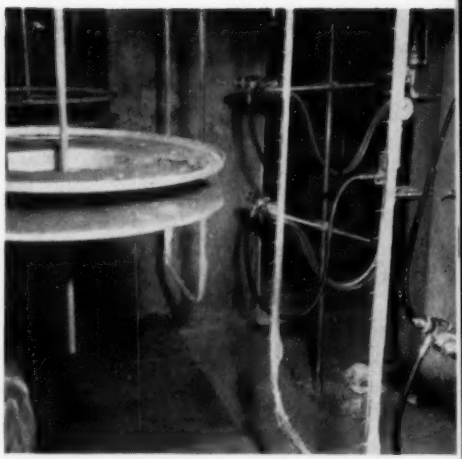


Fig. 13—Hose reel rotates as it passes two automatic spray guns in Ashdee electrostatic setup. (Photo courtesy Stewart-Warner Corp.)

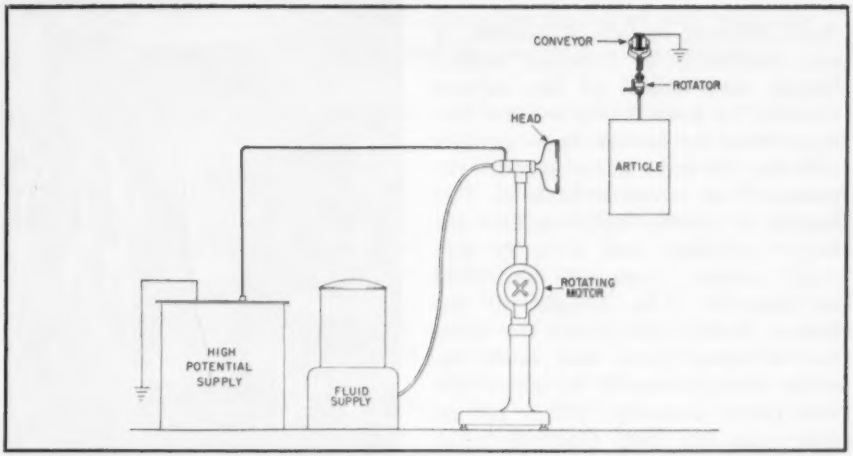


Fig. 14—Sketch showing essential elements of Ransburg No. 2 electrostatic spray process employing bell-shaped spraying heads. Products to be painted pass before spraying head on conveyor. (Illustration courtesy Ransburg Electro-Coating Corp., Indianapolis, Ind.)

tracted to the grounded ware. Each booth has a separate rectifier.

The guns are actuated by the trip arm on the conveyor, which is set in a predetermined position by the loading operators. Actuation is made through a switch-relay-solenoid air valve combination. To finish

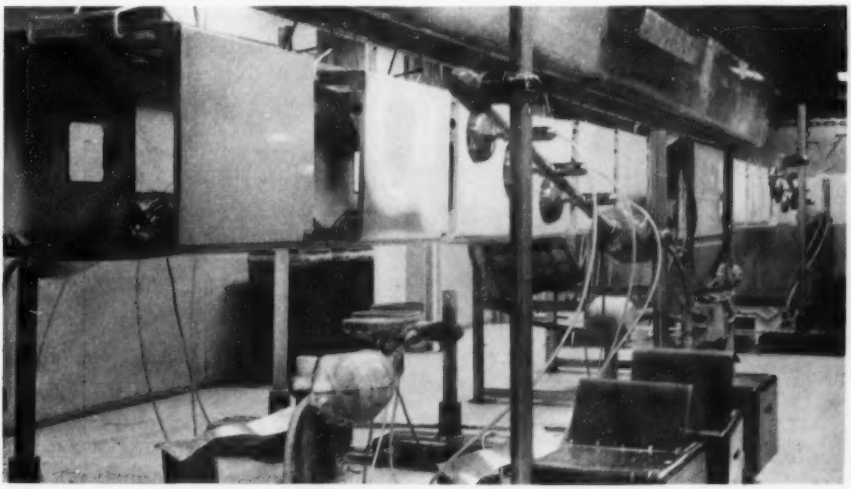


Fig. 15 — Automatic washer cabinets are sprayed automatically on three sides by Ransburg No. 2 electrostatic spray installation in the St. Joseph, Michigan, plant of Whirlpool-Seeger Corporation. (Photo courtesy Whirpool-Seeger Corp., St. Joseph, Michigan.)

eight different models of freezers, it was necessary to consider width, length, and height of the various models. To keep the spray gun distance from the surface to be sprayed uniform, the guns and electrodes are mounted on movable fixtures. The length of panels determines the length of time that a spray gun shall operate. Guns are controlled as required. The height of the freezer model determines the number of spray guns that must operate simultaneously to spray the side panel properly. Either two or four guns are used. Controls make possible the actuation of the correct number of spray guns for the required length of time.

In a similar electrostatic spray installation shown in Fig. 13, drawn steel hose reels are being spray finished in the plant of the Stewart-Warner Corporation, Chicago. Each reel is made to rotate as it passes the two automatic spray guns. The guns are actuated by a contact rod, and the length of time that the guns spray as well as the delay time following a spray cycle can be regulated so that the system functions automatically. Spraying is performed at a pressure of 2 p.s.i. fluid pressure and 13.5 p.s.i. air pressure.

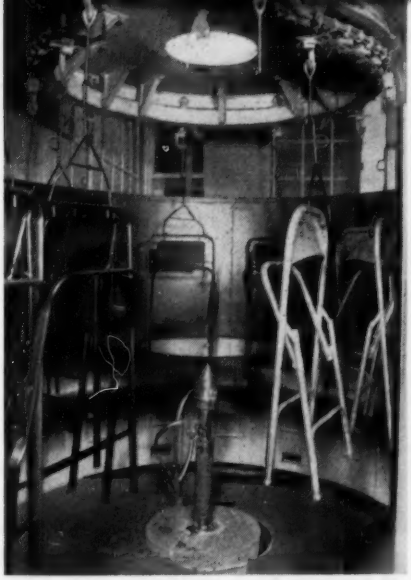


Fig. 17—Electrostatic paint finishing of folding chair frames is accomplished in two Ransburg No. 2 Process booths, one of which is illustrated here. (Photo courtesy Ransburg Electro-Coating Corp., Indianapolis 7, Ind.)

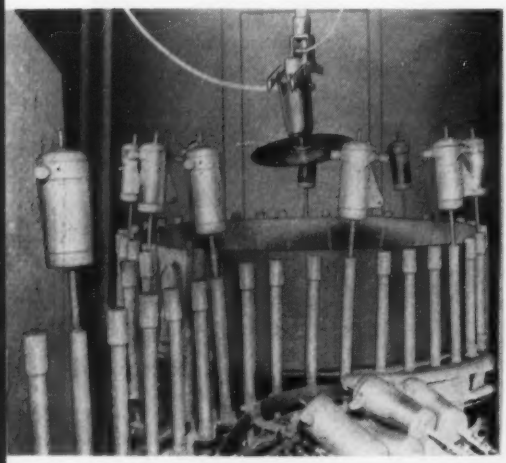


Fig. 16—Sunbeam Mixmaster housings are painted electrostatically as they circle rotating atomizing disc mounted overhead. (Photo courtesy Ransburg Electro-Coating Corp.)

Another type of electrostatic painting system is shown in Figs. 14 and 15. This process employs an electrostatic field of 80 to 100 thousand volts, originating in the bell- or cone-shaped paint applying head (Fig. 14). Objects to be sprayed, passing before the painting head on a conveyor, are grounded to form the other terminal of the electrostatic system. The bell-shaped head rotates at 250 r.p.m. and paint is

pumped to the interior of the rotating cone or head at a rate governed by the area to be coated, the conveyor speed, the nature of the finish, and other conditions. No atomizing air is used. Paint is whirled from the interior surface of the rotating head, atomized by the electrostatic field, and deposited on exposed surfaces of the product to be finished in a uniform film.

Figure 15 is a view of this electrostatic painting system (the Ransburg No. 2 process) installed in the St. Joseph, Michigan plant of the Whirlpool-Seeger Corp. Two sets of bell-type paint setups (three bells each) are installed along the finishing conveyor. As can be noted, each unit consists of three paint sources —one on each side of the conveyor and one underneath—to give coverage on three sides of automatic washer cabinets. A bank of infrared lamps between the two setups sets the paint, so that two coats of enamel can be applied prior to final baking.

Another type of Ransburg No. 2 electrostatic spray process is illustrated in Fig. 16. Instead of the rotating bell head, a flat disc adjustable for various widths of spray application is employed. The spraying angle of the disc can be increased to cover a wider surface, or reduced to cover a narrow surface so that the paint is applied at maximum efficiency. The setup employs the usual electrostatic field. The disc rotates at 850 r.p.m. Paint is pumped to the disc, where it is

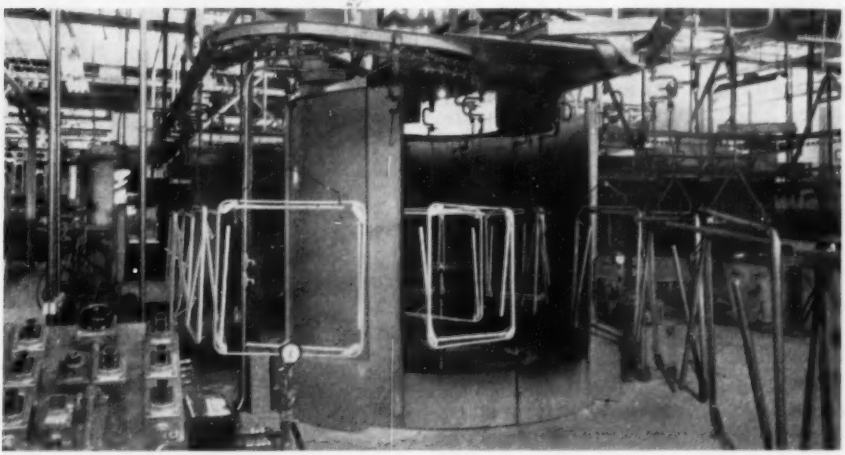


Fig. 18—"Samsonite" card table frames are painted electrostatically in the Detroit, Michigan, plant of Shwayder Bros., Inc., using the Ransburg Reciprocating Disc No. 2 process. Frames are suspended from overhead conveyor, which carries frames through the two identical electrostatic booths. (Photograph courtesy Ransburg Electro-Coating Corp.)

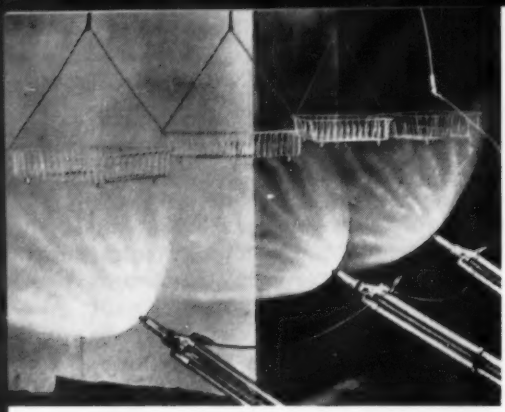


Fig. 19—Wire products may be spray coated with plastisol finishes electrostatically in a conveyorized process. Illustrated are "Ionic Guns" developed for this process. (Photo courtesy Scientific Electric, Garfield, N. J., and Metal & Thermit Corp., Rahway, N. J.)

whirled and atomized so as to deposit a uniform coat on the parts being sprayed.

In the installation illustrated in Fig. 16, Mixmaster housings are being coated in the plant of Sunbeam Corp., Chicago. The housings are loaded on a spindle-type floor conveyor. Recessed areas are reinforced by hand, and then electrostatically painted as they circle the disc. Each spindle rotates as the conveyor circles, thus assuring even coverage. The finishing material is pumped to the spray disc at a rate governed by the properties of the material, the speed of the finishing conveyor, and the thickness of paint film desired.

Figures 17 and 18 show electrostatic finishing setups in which the Ransburg No. 2 Process Reciprocating Disc is used. With this setup the reciprocating disc atomizer is mounted on a spindle which can be sunk in the floor or mounted overhead. The disc can then be made to oscillate through various lengths of stroke at controlled speed. Stroke length and speed are adjustable.

Figure 17 shows such an installation used for painting chair frames in the Detroit, Michigan plant of Shwayder Bros., Inc. Two electrostatic paint setups are used. In the first paint station (Fig. 17) chair frames are coated on one side by a rotating disc mounted on the recip-

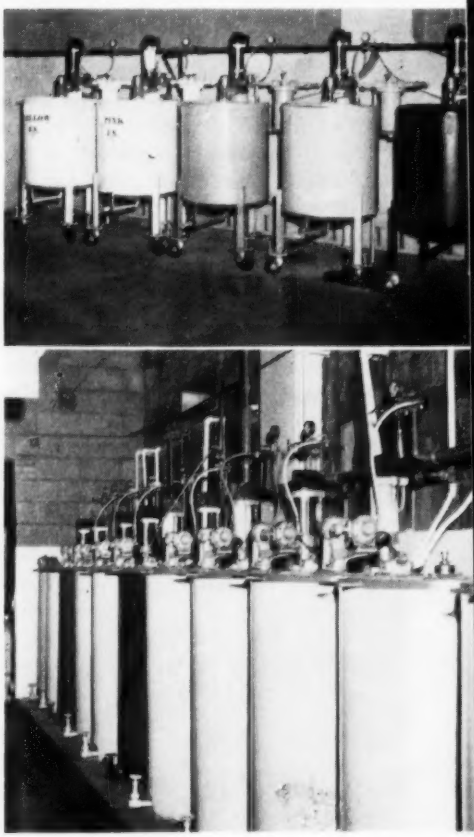


Fig. 20—Paint distribution at Hamilton Mfg. Co. requires two paint mixing rooms. Paint is circulated from each room to points of use. (PRODUCTS FINISHING Staff Photo.)

rocating spindle, which moves up and down to cover the full length of each chair frame. As the work comes out of the first station, an indexer on the conveyor turns the chairs for painting on the opposite side in the second electro-spray station, which is identical to the first. Card table frames are painted in two spray installations (Fig. 18) quite similar to those described for the chair frames.

The electrostatic spray process developed by Scientific Electric, Garfield, New Jersey, employs "Ionic Guns" powered by a 140-K.V. power supply, to spray a mist of paint around the object to be coated. In the installation pictured in Fig. 19, wire baskets and racks of various kinds are being coated with vinyl plastisol electrostatically. In installations of this kind, the paint is pumped to the guns, where the paint particles receive an electrostatic charge. Paint is atomized and leaves the guns as a mist, which coats the objects being transported past the spraying stations on a conveyor.

Some of the conveyorized finishing setups described in this article employ paint pressure tanks or tanks containing paint pumps located right at the spray booth or point of paint application. Plants operating many spray booths, or applying several different colors or kinds of material simultaneously, find it advantageous to install all paint-storage and mixing equipment in a central paint room, or rooms. Figure 20 shows two typical paint storage rooms in the plant of Hamilton Mfg. Company, Columbus, Indiana. The finishing materials are mixed in the various storage and mixing tanks to the desired properties, then pumped, or circulated continuously, to the spray finishing installations where they are applied.

★ ★ ★

MASKING FILM — A 10-minute-sound film on industrial paint masking methods has been made by Minnesota Mining and Manufacturing Company.

The film, titled "Pete, the Paint Boss, and the Efficiency Expert," grew out of discoveries from plant surveys which show the cost of production materials becomes more meaningful when considered from a cost-per-job basis than from the usual cost-per-unit of material.

The film illustrates how the added costs from rejected or reworked parts can be eliminated by the correct application of a masking tape best suited for the particular job.

The film, shown by 3M company representatives, is part of an overall demonstration of masking tape properties, masking techniques and mechanical aids. Write **Minnesota Mining and Manufacturing Co.**, Dept. L6-321, St. Paul, Minn.

★ ★ ★

"MOUNTED WHEELS." A 36-page booklet. Orders may be directed to the **Grinding Wheel Institute,** 2130 Keith Bldg., Cleveland 15, Ohio.

Prior to issuance of the "Mounted Wheels" booklet, an operator was required to compute maximum operating speeds by using "critical speed" information. The eight easy-to-use "maximum speed" tables contained in the "Mounted Wheels" booklet are designed to facilitate correct application. They will eliminate the confusion which occurred when speeds other than safe maximum operating were listed.

The booklet contains rules for safe and efficient operation and information on standard sizes of mounted wheels together with standard mandrel sizes applicable for each.

How Rheem Automotive Company Plates Bumpers

A step-by-step look at a giant plating system recently installed in an ultramodern plant . . .

PLANNING FOR FLEXIBILITY is a prerequisite in the manufacture of automobile parts, because of the yearly model changes and technical improvements that automobile companies make.

Flexibility is the outstanding characteristic of the recently opened multi-million-dollar plant of the Rheem Automotive Company at Fullerton, California. Rheem Automotive, a division of Rheem Manufacturing Company, makes a complete line of bumpers, bumper guards, bumper hangers, coil springs, leaf springs, spring shackles and torsion bars for automobile assembly plants on the Pacific Coast and in the Southwest. Other products made by the company include highway guard rails, guard rail brackets and forged oil tools.

Three main buildings make up this modern plant: the manufacturing building, with an area of 477,847 square feet; the administration building, housing administrative, sales, purchasing and accounting personnel; and the personnel services building, with a cafeteria, personnel office, conference room and private dining room.

The new plant utilizes automation and continuous production flow

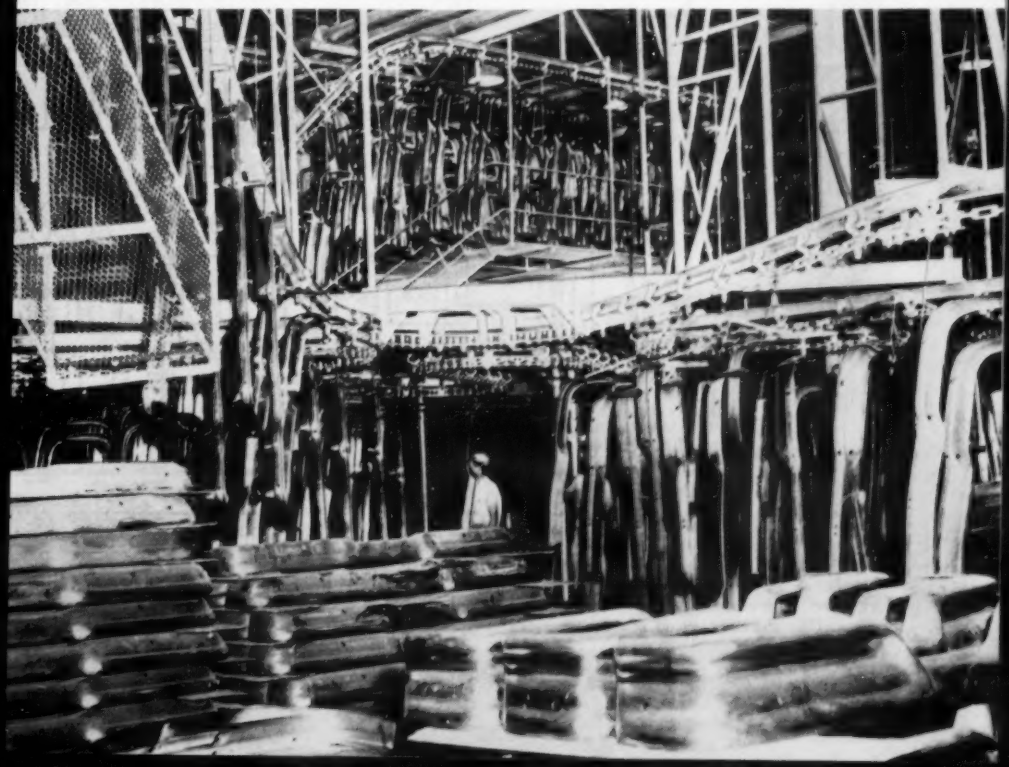
equipment everywhere possible in order to increase productivity without cutting quality. For example, production of bumpers will be increased by 1,250 a day over the old plant's production because of the streamlined operation. Let's trace the forming and plating of bumpers.

Bumpers are made from sheets of hot-rolled, low-alloy, high-tensile steel, purchased in proper widths to be able to form two bumpers from each sheet. The sheets are first pickled, and then are transported to an automatic unloader, which picks up each sheet from a stack and positions it on a belt conveyor. This conveyor feeds the sheet into a level-roll machine and then through a 12-stage, continuous, flat-bed sheet polishing operation.

At the end of the polishing cycle each panel is visually and instrumentally inspected for the proper degree of surface finish. The acceptable metal sheets continue on the conveyor to a transfer unit which feeds them into a machine to be phosphatized, rinsed, coated with drawing compound, and baked, all automatically.

From this process sheets are conveyed into a panel-stacking machine and then into a 1,900-ton, double-action forming press. The sheets are handled manually during the forming operation. The 1,900-ton press forms two bumpers from each sheet.

Fig. 1—Four conveyors converge at this point in the Rheem plant to carry automobile bumpers from the press line to a storage bank or to the polishing room, and eventually to the plating department. These four systems have a conveyor length of 3,200 ft.



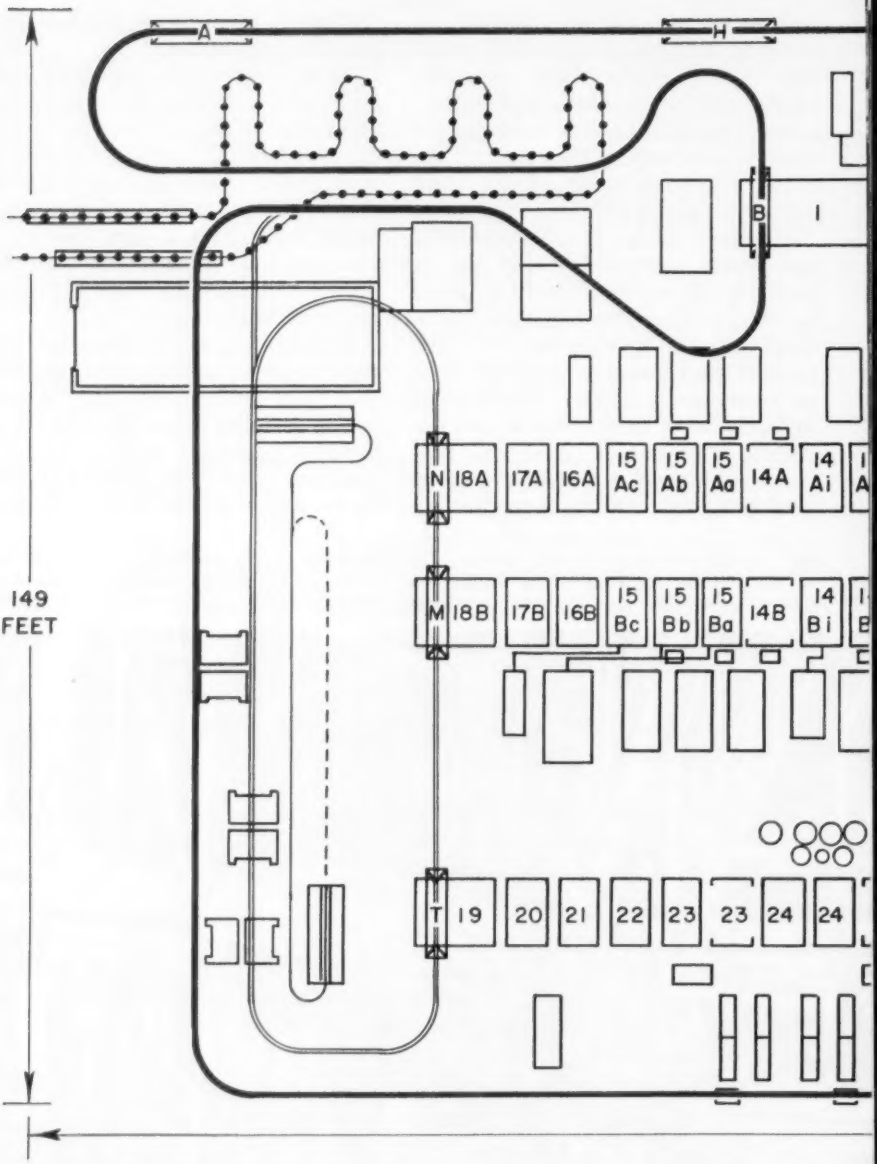
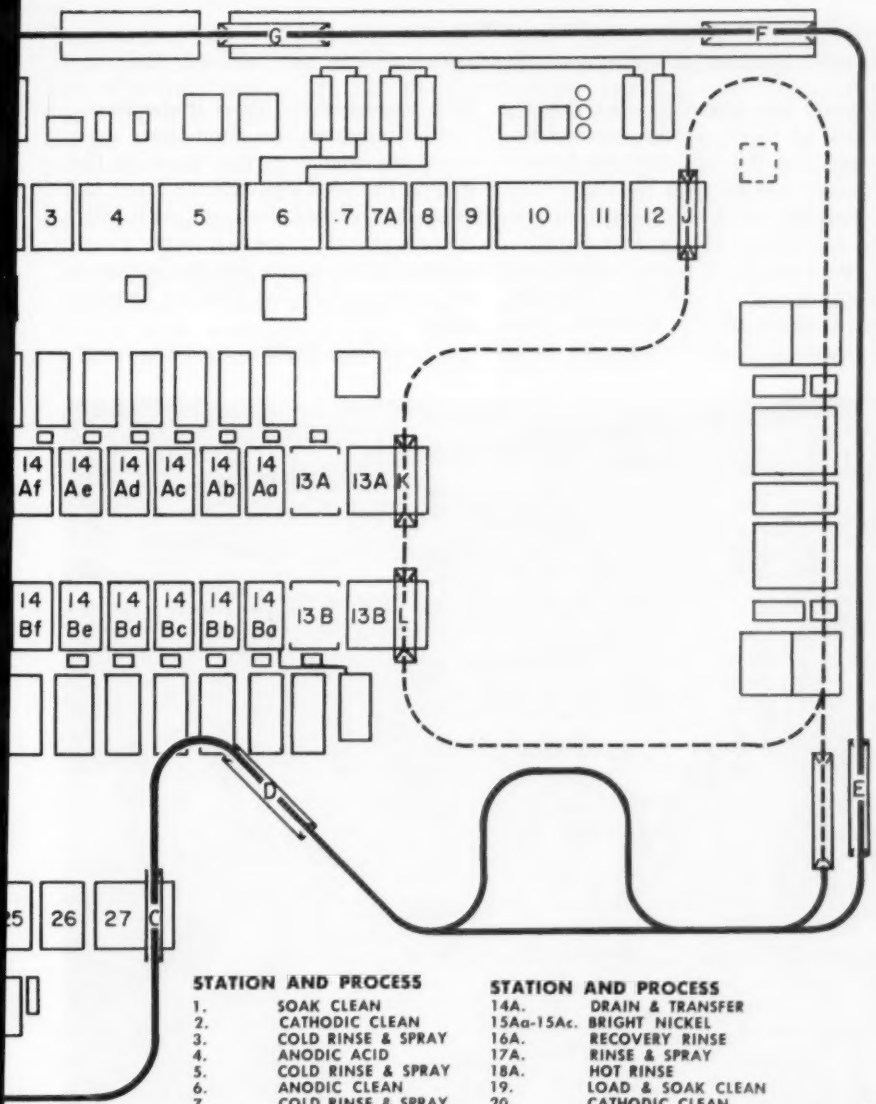


Fig. 2—Drawing shows location of various plating tanks at Rheem and paths of conveyors used to transport parts through these processes. Line shown in blue represents main transport conveyor. Other conveyor paths are represented by black lines—solid, dotted, or broken to differentiate them. Key to numbering system used for tanks is at lower right.



STATION AND PROCESS	
1.	SOAK CLEAN
2.	CATHODIC CLEAN
3.	COLD RINSE & SPRAY
4.	ANODIC ACID
5.	COLD RINSE & SPRAY
6.	ANODIC CLEAN
7.	COLD RINSE & SPRAY
7A.	DRAIN & TRANSFER
8.	ACID DIP
9.	COLD RINSE & SPRAY
10.	NICKEL STRIKE
11.	RINSE
12.	ACID RINSE
13A.	ACID RINSE
13A.	DRAIN & TRANSFER
14Aa-14Ai.	NICKEL SEMI BRIGHT

STATION AND PROCESS	
14A.	DRAIN & TRANSFER
15Aa-15Ac.	BRIGHT NICKEL
16A.	RECOVERY RINSE
17A.	RINSE & SPRAY
18A.	HOT RINSE
19.	LOAD & SOAK CLEAN
20.	CATHODIC CLEAN
21.	RINSE & SPRAY
22.	ACID DIP
23.	RINSE & SPRAY
23.	DRAIN & TRANSFER
24A-24B.	CHROME PLATE
25.	RECOVERY RINSE
26.	RINSE & SPRAY
27.	HOT RINSE

". . . the system must process many different shapes and sizes of bumpers . . ."

The ends are trimmed and reverse bending of the tip is performed before parting the two formed bumpers. Holes are pierced during either the parting or the top-trim operation. All tools are checked carefully to prevent them from making impact marks or scratches on the finished surface of the bumper. The last operator puts the bumper on a belt conveyor for final inspection.

The bumpers are then hung on a conveyor which carries them to the Finish-Polish Department. Here the entire surface of the bumper is buffed on special automatic buffing machines. After inspection the bumpers are conveyed to the Plating Department.

The entire plating system, cover-

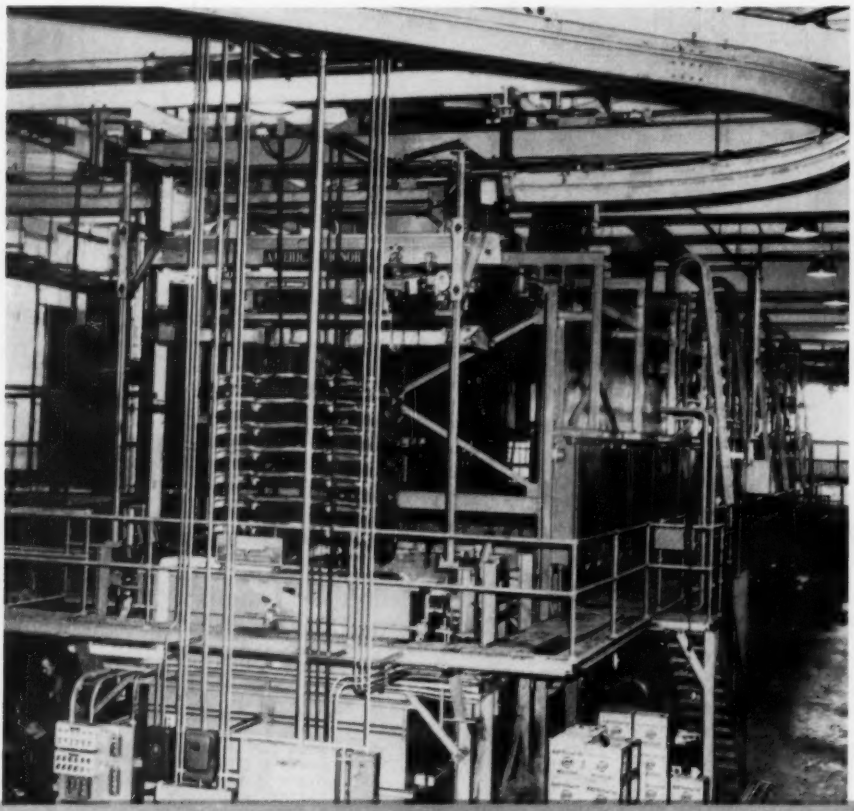


Fig. 3—A rack of bumpers being delivered to automatic cleaning and pre-plate processing line by monorail conveyor. Machine automatically transfers bumpers through 17-stage process.

ing an area nearly the size of a football field, was designed and built by the Udylite Corporation and the L. H. Butcher Company (Udylite West Coast subsidiary). Since the system must process many different shapes and sizes of bumpers, it was designed to give maximum flexibility. The system includes completely automatic cleaning, pickling, nickel strike and pre-plate operations, combined with mono-tractor-fed, cell-type nickel and chromium plating tanks. Three completely independent conveyors transfer all material between five lines of process tanks. Most of the operation is controlled from a central panel.

Bumpers are unloaded from the conveyor that brings them from the Finish-Polish Department. Ten to sixteen bumpers are then loaded on each plating work carrier. These carriers are delivered by another monorail conveyor to the Udylite fully automatic cleaning and pre-

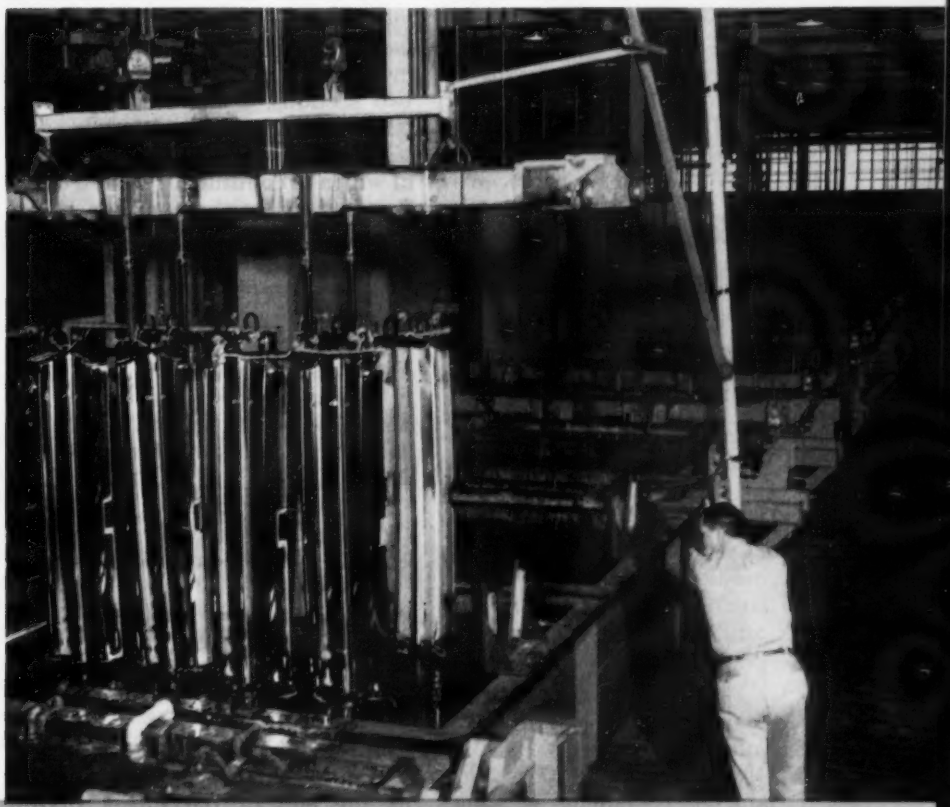


Fig. 4—View of the nickel plating department in Rheem Automotive's new plant. Nickel plating line has two sections containing 16 tanks each. Germanium rectifiers supply current.

"All nickel plating tanks have conforming anodes and cathode-bar agitation."

plating machine, which prepares the bumpers for plating. This machine is 133 feet long, 15 feet wide and 22 feet high. Operated by hydraulic power units, it is one of the largest fully automatic cleaning and pre-plating machines in the country. A straight-line automatic unit, it is similar to a large ratchet, permitting movement in only one direction. When the hydraulically powered pushers move forward, the work carriers progress through the machine. The limited stroke of the pusher bars reduces the need for limit switches, since the carriers cannot over-travel.

The cycle performed by the machine is as follows (numbers correspond to numbers of tanks shown in Fig. 2):

1. Load and soak clean (9,750-gallon tank).
2. Cathodic clean (7,000-gallon tank).
3. Cold water immersion and spray rinse.
4. Anodic acid treatment (7,000-gallon tank).
5. Cold water immersion and spray rinse.
6. Anodic clean (7,000-gallon tank).
7. Cold water immersion and spray rinse.

7A. Drain and transfer.

8. Acid dip (3,000-gallon tank).
9. Cold water rinse.
10. Nickel strike (7,000-gallon tank). (Re-buffing is sometimes necessary after this operation.)
11. Cold water rinse.
12. Acidified rinse.

Racks of bumpers are picked up automatically from the pre-plate processing machine and selectively transferred to one of two nickel plating lines. Here the work carriers are removed from the automatic transport conveyor and pushed forward to a manual pick-up station.

Operators use monorail hoists to move the work carriers through the various stages of the nickel plating cycle. The nickel plating line has two sections, each composed of 16 tanks. Twelve of these tanks contain nickel plating solutions, each of which is continuously filtered and heated. All nickel plating tanks have conforming anodes and cathode-bar agitation. Current for nickel plating is supplied by 5,000-ampere, 18-volt General Electric germanium rectifiers with automatically stabilized voltage control.

The cycle for nickel plating the bumpers is as follows (numbers shown correspond to tank numbers in Fig. 2):

13A. Acidic rinse.

13A. Drain and transfer.

14Aa-14Ai. Semi-bright nickel plating.

14A. Drain and transfer.

15Aa-15Ac. Bright nickel plating.

16A. Recovery rinse.

17A. Water immersion and spray rinse.

18A. Hot water rinse.

Conveyors pick up work carriers at the end of the nickel plating lines and transfer them to inspection stations. Those that pass are

automatically conveyed to the chromium plating tanks, where they are removed and placed on a manually operated monorail conveyor, which is used to carry them through 10 cleaning, rinsing and chromium plating operations.

The two chromium plating tanks have a capacity of 3,750 gallons each. Current is supplied from a 20,000-ampere, 15-volt General Electric germanium rectifier with automatically stabilized voltage control. The cycle for chromium plating the bumpers is as follows (numbers correspond to tank numbers shown in Fig. 2):

19. Load and soak clean.
20. Cathodic clean.
21. Water immersion and spray rinse.
22. Acid dip.
23. Drain and transfer.

24A-24B. Chromium plate.

25. Recovery rinse.
26. Water immersion and spray rinse.
27. Hot water rinse.

After chromium plating, the work carriers are picked up and delivered to an unloading area, where the plated bumpers are removed for inspection and palletizing.

After the bumpers have been removed, the plating racks and work carriers are carried through an electrolytic rack-strip tank by the overhead transport conveyor. This tank contains 31,000 gallons of stripping solution. After stripping, the work carriers travel on the conveyor to the reloading area.

Steam for heating hot processing solutions is supplied by two 500-h. p. cross-drum-type boilers. Temperatures of all heated solutions are carefully controlled by special thermostatic devices.

Koroseal, plastisol and neoprene tank linings protect equipment from corrosives. Giant fans and water-wash fume exhausters suck fumes and vapors from processing tanks.

The germanium rectifiers used to

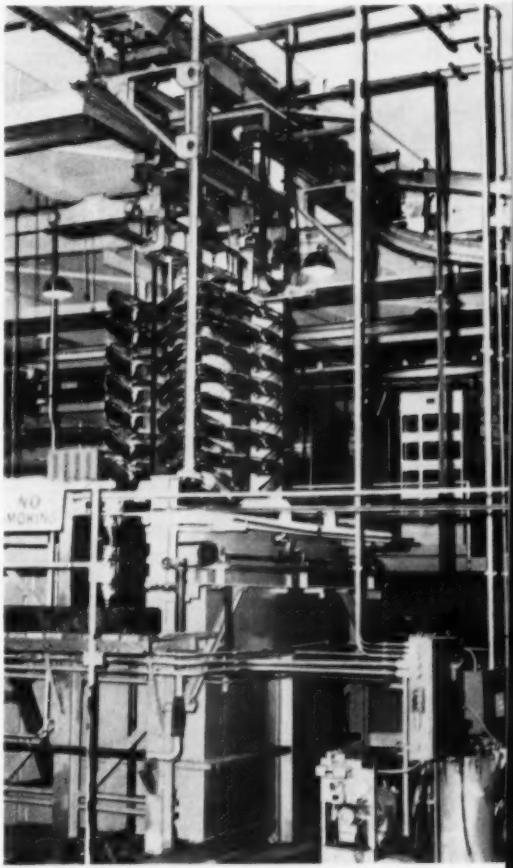


Fig. 5—A plating-rack load of chromium plated automobile bumpers being removed from last operation of the chromium plating line by the automatic overhead monorail system. Bumpers will be automatically transferred from this point to final inspection.

supply direct current for this plant produce 160,000 amperes of direct current. This installation of germanium rectifiers is believed to be the largest in the plating industry.

The General Electric rectifiers are housed in 5,000-ampere cubicles, with 18 of these mounted on a mezzanine floor to power nickel plating tanks. Two 15,000-ampere and two 20,000-ampere units, each rated at 15 volts, are mounted on the floor.

The 5,000-ampere cubicles, because of their compact size, (21 inches wide by six feet long by six feet high) and light weight (less than 3,000 pounds) enabled a "building block" arrangement to be used, designed for maximum flexibility and ease of maintenance. Each cubicle contains three blowers, five power trays and five transformers. Germanium cells are hermetically sealed from the plating room atmosphere.

Fig. 6—Line of 5,000-ampere, 18-volt General Electric germanium rectifiers (right) and Inductrol automatic voltage regulators shown mounted on overhead catwalk at Rheem Automotive Co., Fullerton, Calif. (Photos courtesy Rheem Automotive Co., Fullerton, Calif., and General Electric Co., Schenectady, N. Y.)

As an added safety feature, a protective device is incorporated within each unit. It gives a warning signal first when current or temperature limits are exceeded, and finally disconnects the unit automatically before damage can be done.

Sulfuric and muriatic acids used in plating are stored in large tanks outside the building, adjacent to the plating department. Tank capacities are as follows: sulfuric, 4,000 gallons; muriatic, 1,500 gallons. Another 4,000-gallon tank, located near the sheet-pickle operation, receives partially spent sulfuric acid from the anodic etch (in the plating cleaner line). This sulfuric acid is re-used to pickle the scale from bumper steel.

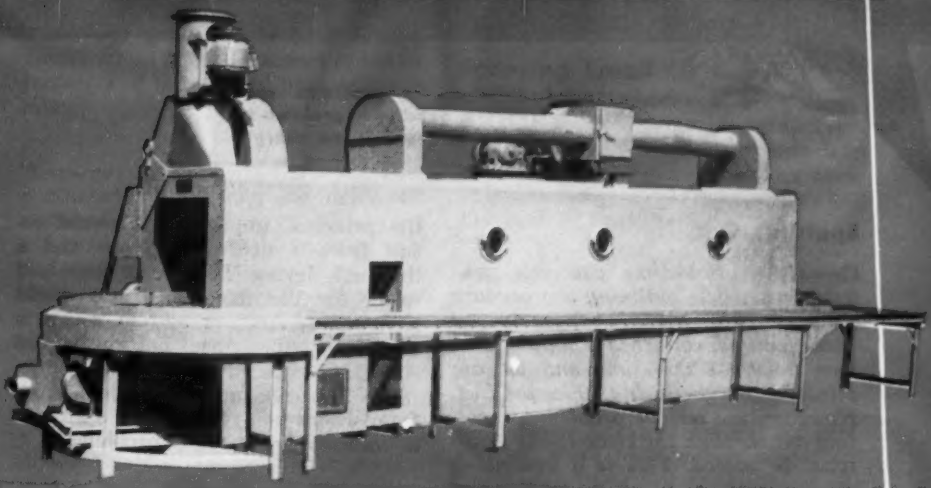
★ ★ ★

Plastics for Corrosion-Resistant Applications. By Raymond B. Seymour and Robert H. Steiner. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. Price $7.50.

This book begins by describing the relationships between the chemical and physical properties and the molecular structure of plastic materials. Then follows expert information on the use of plastics as protective coatings, organic linings, chemical resistant mortar, cements, casting resins, plastic foams, impregnants, industrial adhesives and reinforced materials.

For more data on advertisement on opposite page, circle 330 on Reader Service Card——→

ONE MAN OPERATION—
POWER SPRAY WASHERS
by PETERS-DALTON
FOR CLEANING MISCELLANEOUS SMALL PARTS



To meet the needs of a major appliance manufacturer, PETERS-DALTON designed, engineered, built and installed the steam heated 3-stage Power Spray Washer shown above. It solved the problems met in this plant through the need for between-operation cleaning and paint preparation for small parts of varying sizes. This washer has a steam heated blow-off with an alkali cleaning stage, followed by two rinses. It is so designed and built that parts are placed on a 30" wide mesh belt and conveyed at speeds of 2' to 4' per minute through the cleaning cycles, and exit over a gravity return roller conveyor to the position for handling by only one man who performs both the loading and unloading operations.

Perhaps you have cleaning or paint preparation problems that could be met by a P-D Power Spray Washer such as the one above. If so, remember that with P-D every job is studied and handled as a "first." For more than a quarter century PETERS-DALTON has been designing, engineering, building and installing finishing equipment to meet almost every conceivable requirement.

Whatever your finishing problems, you can with assurance present your needs to us . . . just write, wire or phone. We'll be glad to tell you more.

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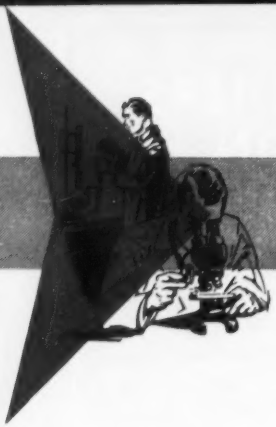

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Spotting Out

Question: *Sometime ago you published an article outlining a procedure for producing antique copper. As you know, antique copper is a popular surface finish at this time and we are thinking of producing this product. However, the serious problem of spotting out through the clear epoxy finish must be solved. This is a continuing serious problem to all processors and I am wondering if you or any of your staff can suggest a cure.*

We successfully eliminate this problem on small hardware by copper plating, copper buffing, copper plating and buffing again, and then spraying the clear epoxy finish. This seals the pores and eliminates the spotting, but would be impractical on high production sheet metal parts.

I might add that this problem is worse in hot, humid weather.

I would appreciate any information you could give me.

J. M. S.

Answer: We suggest that the organic finish be sprayed at an elevated temperature. Your suggestion of plating another metal before the copper, followed by a forced drying process prior to spraying might accomplish the same result. Actually, I do not think that another plate underneath the copper would be of much help. I feel that the principal improvement would result from a neutralizing dip and a thorough drying. The use of deionized water for the final hot rinse might have merit. Another system which is used is a triple rinse; hot rinse, cold rinse, hot rinse, dry.

We are recommending companies from whom you may secure additional information on your problem.

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Chromium Undercoat, Surface Protection

Question: *Our engineers are anxious to find out the current trend in chromium plating, for decorative purposes only, of such parts such as radiator grills, bumpers, etc., as opposed to heavier chromium plating for other parts. They are particularly anxious to know what undercoating is used under this so-called "decorative plating"—zinc, nickel or aluminum?*

We have consulted two companies regarding eventual study of complete installation and will also be obliged if you will furnish us with the names of other manufacturers who may be in a position to make such a study.

Also, we understand that a metallic liquid coating can be sprayed on surfaces which are to be protected from

rust or oxidation — this operation being used in place of plating methods.

We also understand that it is possible to achieve silver coating or chromium plating in five minutes on any type of surface, whether it is smooth or rough.

We will be very thankful if you will kindly let us have the names of manufacturers of this special process equipment.

F. R. O.

Answer: As the companies you have contacted will tell you, one undercoating used for decorative chromium plating is nickel, or a combination of copper and nickel, if the part is to be used for outdoor exposure. Now that nickel is in short supply, there is considerable use of white brass or bronze underneath chromium for parts to be used indoors.

In answer to your question there is a process available in which a finely divided metallic pigment is suspended in a suitable paint vehicle and sprayed on rusty surfaces for exterior service. We are referring you to sources from which this coating is available.

We would like to make a strong point of the fact that this operation is not being used to replace plating or electroplating methods. Further, we should like to emphasize that it is not possible to apply a silver coating or chromium plating by this method in five minutes on any type of surface. As a matter of fact, silver or chromium may not be applied by this method.

★ ★ ★

High-Heat Baking Japan

Question: *In your February issue we note on page 30 of the "Finishing Clinic," in answer to the question on high-heat baking japan, you suggest contacting several companies for desired information. We would appreciate it if you would submit the names of the companies to us. Perhaps they can help us with our problem.*

P. P.

Answer: We are referring you to several companies from whom you will be able to secure the information.

★ ★ ★

Spraying Small Objects

Question: *My work consists of arranging small objects to be sprayed. Could you refer me to anyone who could supply a machine to place these objects mechanically, thus eliminating the manual operation?*

S. C.

Answer: We are suggesting several sources of supply from whom you can secure the information you desire.

★ ★ ★

Barrel Finishing of Aluminum

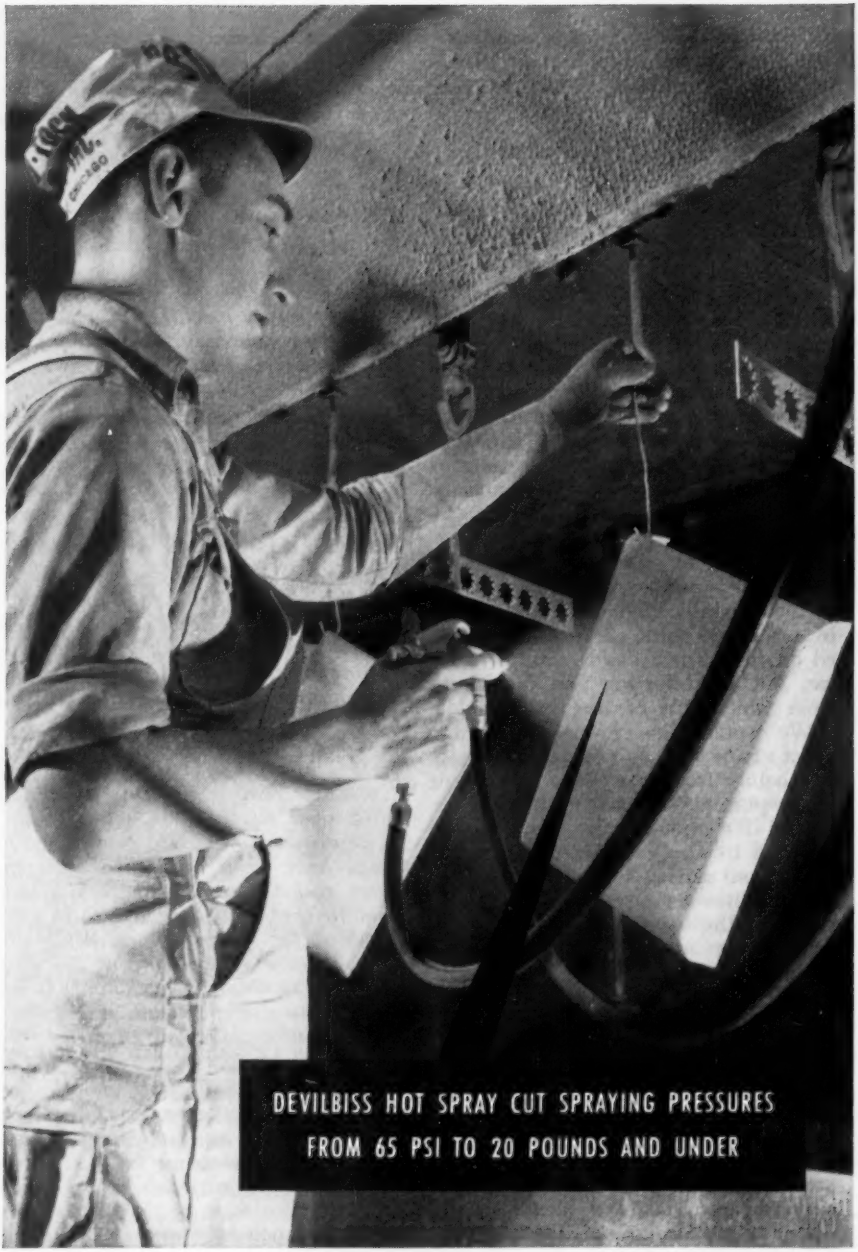
Question: *Enclosed are several samples of slugs from which aluminum collapsible tubes are extruded. In extrusion, we are getting scratches and pitting of the side walls, due to the tear marks on the side walls and the burrs on the edges of the slugs.*

We are unable to remove these defects entirely with simple tumbling. Excessive tumbling seems to put a hard shell on the slug, which makes it impossible to extrude properly. The slugs have been burnished with the same result. However, we understand that in the burnishing the slugs were tumbled for several hours. While the defects were removed from the slug, the long tumbling period made it impossible to extrude them.

Any information regarding the above will be appreciated.

R. D. T.

Answer: For expert suggestions, technical assistance and processing of samples, we are referring you to several companies who maintain barrel finishing laboratories to be used for solving problems such as yours.


DEVILBISS HOT SPRAY CUT SPRAYING PRESSURES
FROM 65 PSI TO 20 POUNDS AND UNDER

Erwin Prust, Alwin Mfg. Co., points out the benefits of low-pressure spray, and how . . .

"We save 55 gallons of paint a week with DeVilbiss hot spray"

The Alwin Manufacturing Co., Green Bay, Wisconsin, manufactures custom dispensers for the paper and soap industries, as well as metal stampings of several kinds. About 90% of their products are painted before shipping.

States Mr. Erwin Prust, secretary-treasurer, and purchasing agent for the company: "By changing to the DeVilbiss hot-spray method, and using DeVilbiss spray booths and spray guns, we reduced paint consumption 25% (about 55 gallons per week), decreased drying time by as much as 40%, and reduced cleanup time from 4 to 1½ hours. More than this, we can now spray between 60 to 90 pieces per hour, as compared to 30 to 60 under the old system!

"One big reason for these savings and advantages is that with the DeVilbiss hot-spray system, we were able to lower the air pressure from 65 psi to 20 pounds and under. This eliminated most of the overspray losses we had experienced in the past, thereby reducing our paint consumption."

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The DeVilbiss booth permits units to pass through on an overhead conveyor; allows painters to spray each unit without removing it from hooks.

DeVilbiss hot-spray system keeps paint hot right up to the gun, assuring uniform viscosity at all times.

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For more data circle 331 on Reader Service Card

Precise Controls Assure Even Plating of Wire in New Continuous Process

A thin, evenly deposited triple-plated coat is applied to hundreds of feet of wire an hour in a new continuous-type wire plating system at Wilbur Driver Co., Newark, N. J.

The system is used primarily for silver plating fine strands of manganese-nickel wire, approximately 0.036 inch in diameter, with a nickel-silver deposit, 0.0009 inch thick. Fully automatic, the continuous system draws four strands of wire at a time from a "take-off" stand through 12 cleaning, plating, rinse and drying tanks, then rewinds it.

The new system was designed, built and installed by Hanson-Van Winkle-Munning Co. of Matawan, N. J., which also furnished all controls and rectification equipment for supplying and regulating current.

Wilbur Driver Co. produces hundreds of different sizes and types of wire for industrial and commercial purposes. Included in its plant are complete facilities for drawing wire, from a $\frac{3}{8}$-inch rod down to a fine wire as small as 0.0005 inch. The finished products are used in such items as

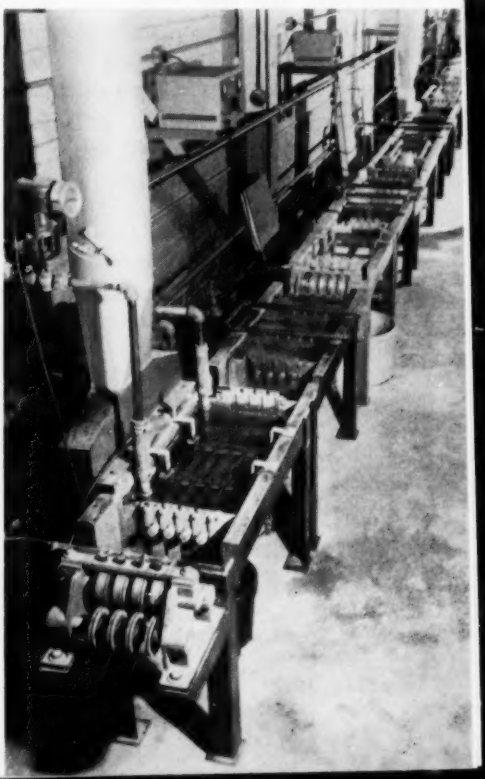

Fig. 1—Overall View: continuous-type wire plating system, installed at Wilbur Driver Co.

A new wire-plating system at Wilbur Driver Co. has control and processing features that assure even current distribution (hence even plating) over the entire surface of four strands of wire; provide stepless control over the full current range; and offer fully automatic operation, requiring an operator only for maintenance and load-unload. It's rated to plate 20 feet of wire a minute, can go faster.

electron tubes, all kinds of electrical appliances, radar systems and cross-wire for telescopic sights, as well as wire for military control instruments.

The continuous plating system is used mainly for electron tube wires. The base wire is made of a manganese-nickel alloy, for high-temperature strength. The wire is silver plated to provide good control of electron flow between grids in the completed tube. The silver plating is 4-6 per cent of the total wire weight.

After plating, the wire is drawn down to 0.002-0.007 inch diameter, then packaged on spools.

Before acquiring the H-VW-M automatic plating system, Wilbur Driver had its wire rod silver-plated by an outside processor. Plating was done by a spiral method, where large coils of wire are immersed in solutions in a rotating process.

The job was moved in-plant and to the continuous processing method for several reasons:

1. Driver feels that continuous plating provides better control for plating the entire surface of the wire.

A batch method provides little control over deposition thickness. Outside surfaces of a large immersed coil would receive an excessively heavy coating, while inner surfaces received little or none. At Wilbur Driver this presents a critical problem when the plated wire is drawn down. If the silver is not evenly deposited within close tolerances, the wire would not meet specifications. The company has eliminated this non-uniformity by use of continuous plating.

2. Considerable economy is derived by in-plant plating.

3. The H-VW-M system can also be used for nickel or copper plating, Wilbur Driver reports, although so far it's been used only for silver. By changing the three plating tanks in the system, it can be used for other wire plating operations, within the established limits of the rectifiers and other control elements installed with the system.

4. The operation was also moved in-plant to give the company better control over delivery dates.

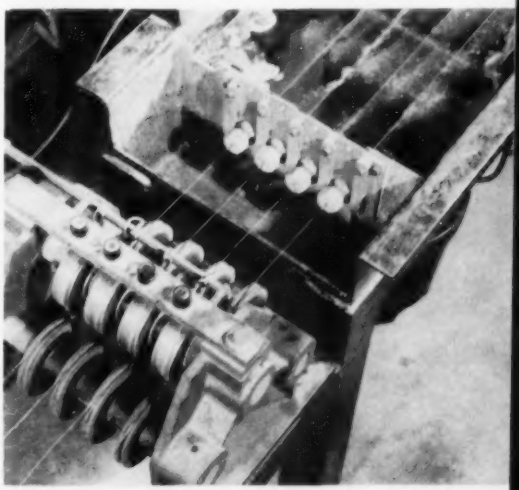

Fig. 2—Closeup of current contact and tank seal mechanisms at first (electrocleaning) tank. Grooved contact sheaves rotate with the wire, maintain continuous contact, and result in a steady current supply for the tank.

Practical Applications . . .

Equipment

All elements of the system were designed by H-VW-M engineers and constructed by H-VW-M personnel to solve specific problems presented by Wilbur Driver. However, there are several features new to the continuous plating process incorporated in this system.

1. *Contact and Seal Units.* Current is fed into each electrolytic tank at the ingoing end. At this point are three sets of circular sheaves—two idler and one contact for each of the four wires. These grooved sheaves are positioned so that the wire exerts a slight pressure against the contact sheave, establishing a positive contact. All three sets of sheaves rotate at the same speed as the wire travels, maintaining a constant contact and current supply. Curent passes from rectifier to contact sheave (made of copper, brass or a similar current carrying material) and to the wire.

Every tank in the system is provided with leak-proof seals at all points where wire enters and leaves the tank. These seals are mounted on sliding gibs, so that wire inlets and outlets can be raised above the solution level in the tank, if wire is not being run through that processing line.

2. *Selenium Rectifiers.* Power control at the five electrolytic tanks in the system is provided by H-VW-M heavy-duty, self-contained-type selenium rectifiers. At cleaning and strike tanks, 15-amp., 12-volt units are used. A larger 50-amp., 10-volt unit is installed for the silver plating tank.

With these units the system is provided with stepless power control over

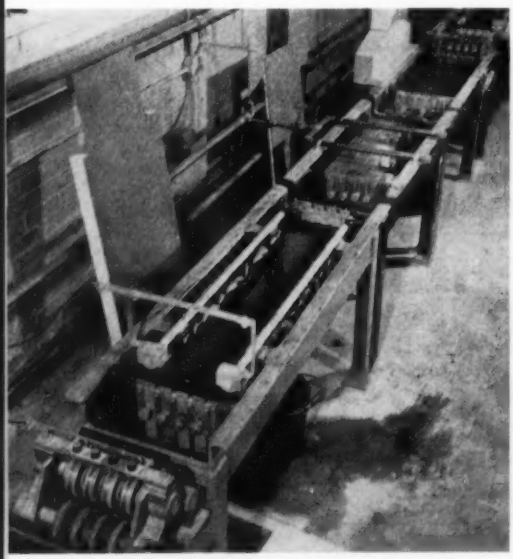

Fig. 3—Nickel-strike and rinse tanks in continuous plating system. Inlet and outlet seals at tanks can be raised above the level of the solution when a wire line is not being used.

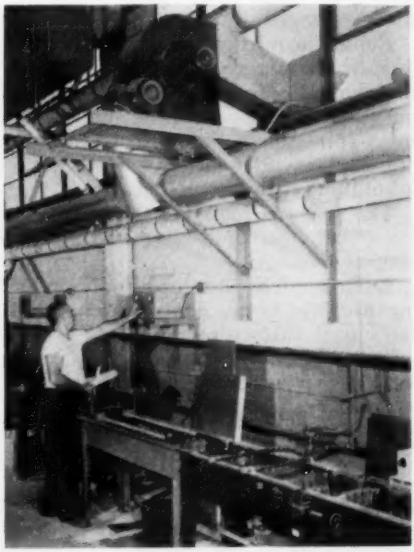

Fig. 4—Operator adjusts the H-VW-M selenium rectifier at nickel strike tank. Ventilating system draws fumes off first cleaner tank, cyanide and hot-water-soak tanks.

the full current range, for making any required current changes during a plating operation or for different plating processes. Each unit is installed directly over the tank it services, fully visible and within hand's reach of the operator.

3. *New Drying System.* The twelfth tank in the system contains a newly designed drying system. Forced air drying is provided to prevent spotting of the wire after it has been plated. The dryer is divided into two compartments. The lower section contains a heating coil, the upper section is divided into four small tunnels through which the wire passes.

Air is forced over the heating coil and heated to 200 to 250 deg. F. It then passes up into the tunnels, blowing counter to the movement of the wire. In the tank preceding the dryer, wire has been immersed in a hot water soak rinse in order to speed up the drying process.

Automatic Plating Cycle

The rated speed of the system is five feet per minute (for each line of wire). The wire travels through the complete system in about 10 minutes. Speed can be varied between two and 14 f.p.m. by adjusting the variable-drive, two-h.p. motor that is located at the unload station. Variations in plating thickness for different products can be obtained by adjusting the speed of wire traveling through the system.

The wire moves through the following processing tanks in its trip through the silver plating process. (Immersion periods are based on five-f.p.m. speed.):

1. *Cleaning Tank.* Wire is first

To page 65→

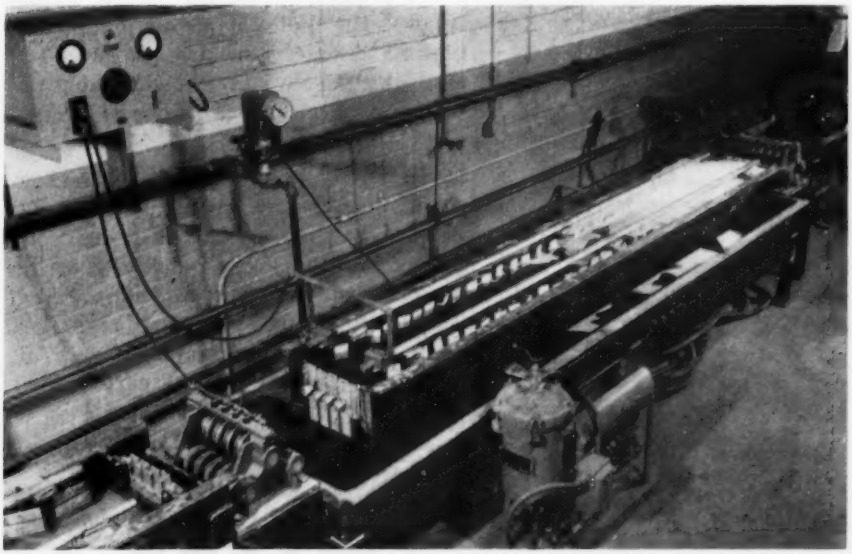

Fig. 5—Main silver plating tank in the system. Wire is in solution for about two minutes. Solution is continuously filtered through Industrial pump-filter system, then pumped back into tank. A silver strike prior to this tank improves adhesion of the heavier coating. Wire travels five feet per minute. Rate can be varied from two to fourteen feet per minute.

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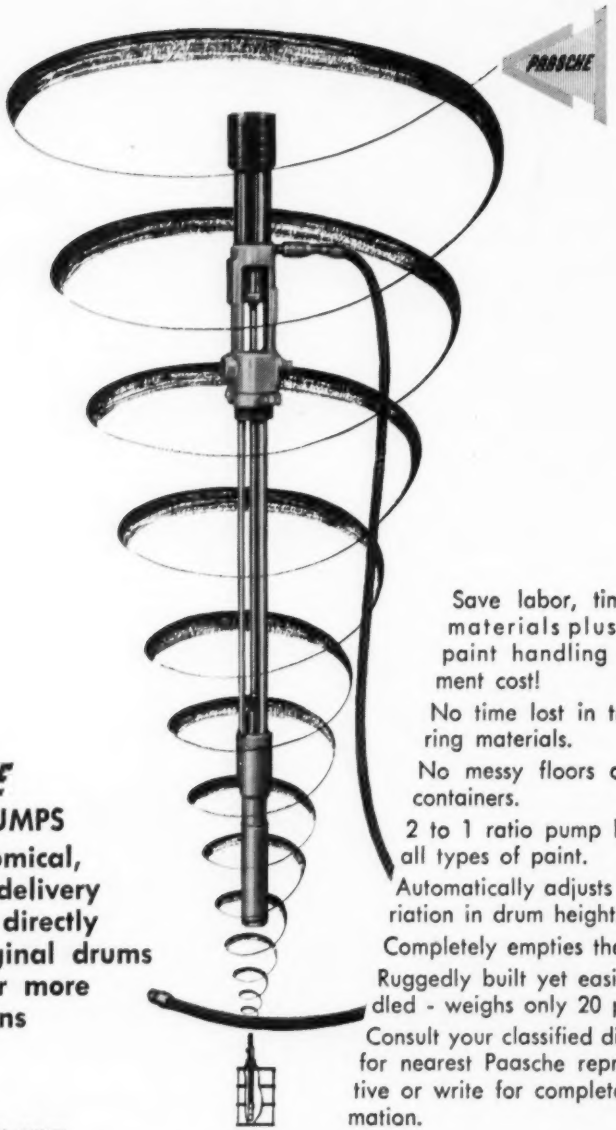

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cleaned in an electrolytic bath for 30 seconds. Cleaner used is Matawan 48W, a high caustic-silicate heavy-duty electrocleaner, in a solution of 8-12 oz./gal. of water. Temperature is maintained at 180 deg. F. by a Powers regulator. An exhaust duct at this tank draws fumes off to an outside air vent.

2. *Spray Rinse.* Cleaner is rinsed off wire in a spray rinse tank (two headers, each with four nozzles). This unit can be converted to a soak rinse by closing the tank's drain, should a different operation require it.

3. *Electro Pickle.* Wire is again cleaned in a sulfuric acid pickle, 65 per cent by volume, for 30 seconds.

4. *Spray Rinse.* 30 seconds.

5. *Nickel Strike.* A thin coating of nickel is plated on the wire in a nickel chloride solution at 50 a.s.f., room temperature, for 45 seconds.

6. *Spray Rinse.* 30 seconds.

7. *Cyanide Dip.* Wire is immersed in a potassium cyanide solution, 2-4 oz./gal. of water, at room temperature for 30 seconds. Air ducts are installed at this tank.

8. *Silver Strike.* A thin coat of silver is applied to the wire, to provide better surface adhesion for the heavier coating. Silver cyanide is applied for 45 seconds at 45 a.s.f.

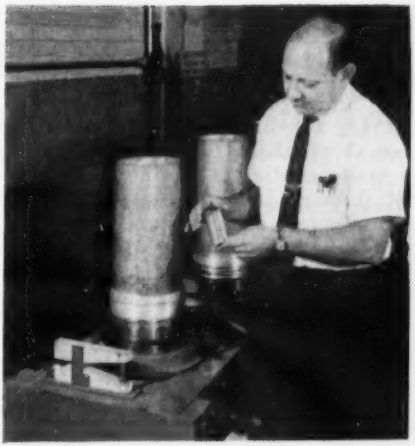

Fig. 7—Paul Asnis, company electrochemist, inspects a spool of finished wire. Plated wire is removed from "take-off" spools, drawn down to between 0.002- and 0.007-inch diameter, then packaged. Continuous plating prevents stripping off silver in the subsequent drawing operation. (Photos courtesy Hanson-Van Winkle-Munning Co., Matawan, N. J.)

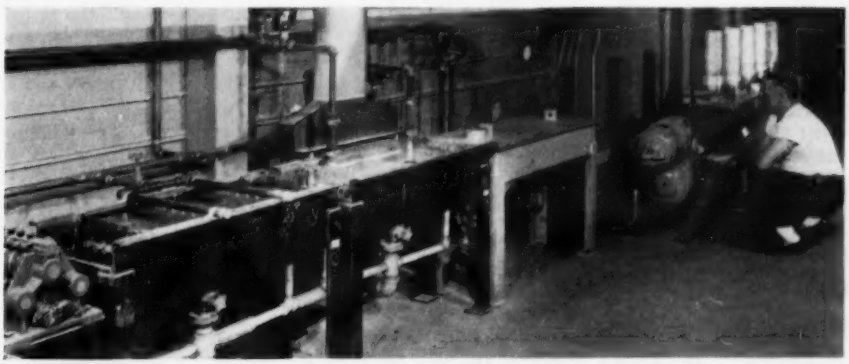

Fig. 6— Spray rinse, hot water soak, and drying units at end of system. Enclosed dryer forces heated air over wire, prevents it from spotting as water evaporates. Operator is adjusting variable-speed motor, which draws wire through by turning take-off spools.

Practical Applications . . .

9. *Silver Plating.* Main plating tank is 11½ feet long, providing a plating period of about two minutes. Silver cyanide solution is continuously filtered through an Industrial filter, then pumped back into the tank. Temperature is maintained at 100 to 110 deg. F. by a Powers regulator.

10. *Spray Rinse.* 30 seconds.

11 & 12. *Soak Rinse and Dry.* Wire is immersed in hot water, maintained at 160 to 180 deg. F. to speed drying operation in final tank.

After the drying operation, wire is rewound on large "rewind" spools, similar to the "take-off" spools at the beginning of the line. These units transmit power from the drive motor through five individually clutched heads to draw the wire through the system.

All tanks in the system are made of double electric-welded steel, fabricated from ¼-inch plate, with an angle iron rim at the top and necessary drain and overflow facilities. Electrolytic tanks and rinse tanks following them are lined with 3/16-inch rubber. Idler sheaves are made of plastic material to provide insulation against current loss.

For more data circle 1 on Reader Service Card

★ ★ ★

Plastisol Lining Protects Blast Barrel

Lining sand-blast barrels with plastisol has significantly increased barrel life at the Underwood Corporation's Hartford, Connecticut plant.

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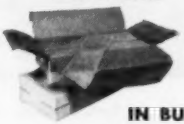

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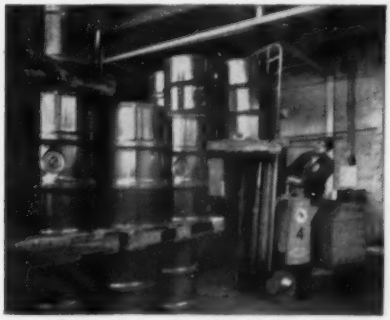

IN INDUSTRY, drums, materials handling equipment, machine tools and many other steel products used throughout the plant are protected by a Granodine base.

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Practical Applications . . .

To reduce the cost of replacements and eliminate the inconvenience of changing barrels frequently, Underwood had all barrels spray-coated with Unichrome 5300, a plastisol made by Metal & Thermit Corporation. This coating is a 100 per cent solids polyvinyl chloride composition which is resistant to abrasion and chemicals. Underwood uses a similar coating for coating racks and tanks in its plating department.

Unichrome plastisol lining that protects inside of this sand blast barrel has withstood effects of abrasion for three years.

The plastisol-lined barrels have been in constant use under the sand blast for three years. Since a barrel can be relined, it need not be replaced even after the lining wears out.

For more data circle **2** on Reader Service Card

★ ★ ★

Sealless Pump Conveys Etching Fluids

Maintenance of pumps used in the continuous conveyance of corrosive metal etching solutions is a serious problem. Leakage of these solutions can score pump shafts and cause costly breakdown of pumps.

The Vanton Pump & Equipment Corporation of Hillside, N. J., manufacturer of plastic pumps, recently solved this problem satisfactorily in an installation made at the radio and television manufacturing plant of the Westinghouse Electric Corporation in Metuchen, N. J. Conveying concentrated ferric chloride for printed-circuit etching had caused considerable difficulty in pump maintenance.

Basically the printed circuit process at Westinghouse consists of silk screening circuit diagrams with acid-resistant ink on base boards which are then conveyed into spray-etch chambers. The excess copper foil not protected by the resistant ink is etched away by warm concentrated $FeCl_3$. A

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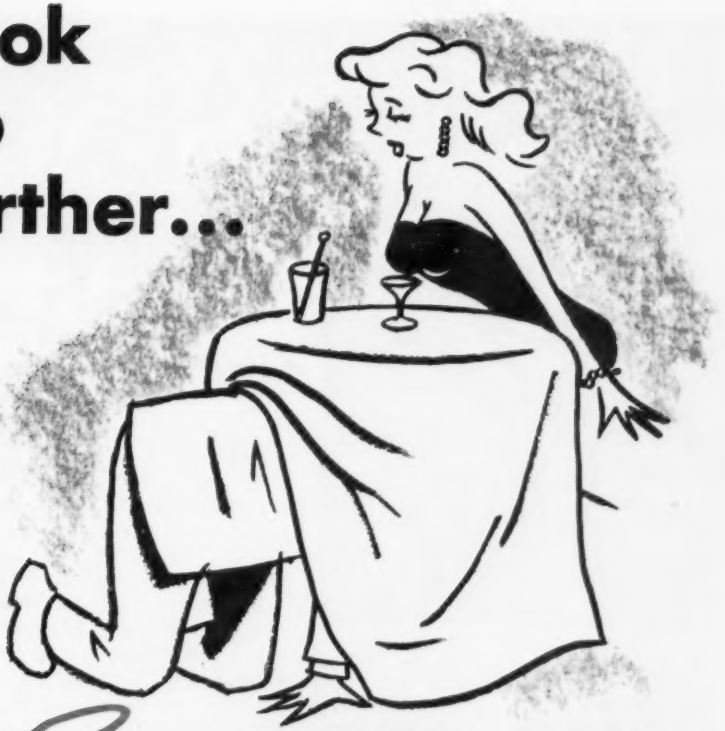

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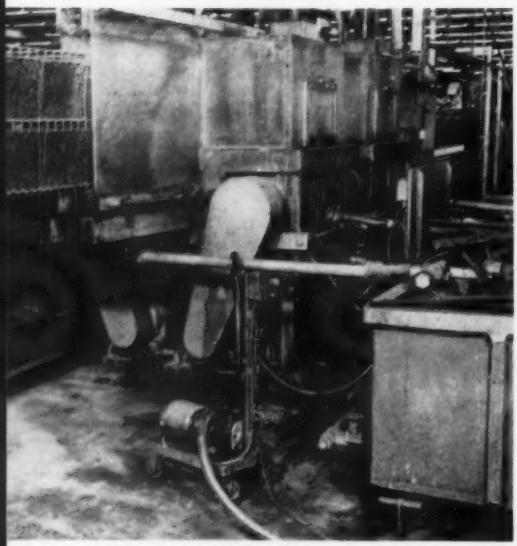

Fig. 1—General view of Vanton sealless pumps transferring concentrated $FeCl_3$ from reservoirs (right) to spray-etch chambers (left) at Westinghouse Electric Corporation's TV-Radio plant in Metuchen, New Jersey.

vapor degreaser removes the acid-resistant ink, exposing the remaining copper circuit.

Pumps are used to convey $FeCl_3$ continuously from overflow reservoirs, providing a supply of fresh liquor to the spraying system.

Vanton recommended the use of three of its sealless pumps with a capacity of five g.p.m. each. These had no stuffing box or mechanical seal and were self-priming. Since the fluid is in contact only with the inner surface of the Bakelite housing and the outer surface of a natural rubber flex-i-liner, the pump is completely protected from the chemical action of $FeCl_3$.

Westinghouse installed a Vanton pump at each of the two etch chambers to deliver $FeCl_3$. A third pump was used as a movable auxiliary for cleaning out the chambers and the reservoirs when the batch of ferric chloride was exhausted.

In addition to eliminating the problem of corrosion, maintenance was reduced by simple replacement of the rubber liner. The three pumps are operated continuously for a 12-hour shift every day.

The $FeCl_3$ flows in a channel be-

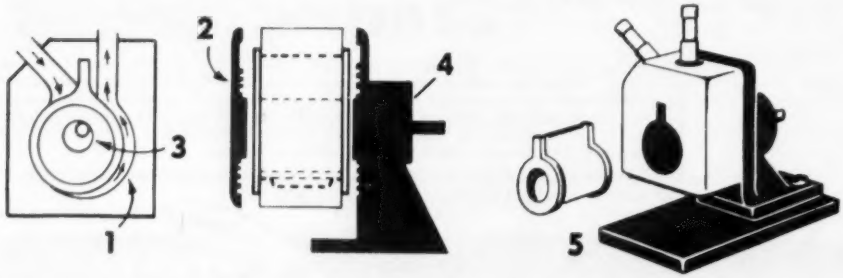

Fig. 2—Operation of the Vanton sealless pump is shown in above diagram. Ferric chloride flows in channel between plastic body and rubber flex-i-liner (1). Pumping mechanism is a rotor mounted on an eccentric shaft (3) which at each revolution pushes liner against body block sweeping slug of $FeCl_3$ around circular track from inlet to outlet. Flanges of liner are secured to plastic body block by bolted face plates (2). All bearings are outside of fluid area in protective stainless steel assembly (4). Liners are replaced by removing face bolts and face plate, slipping old liner out, new one in (5). (Photographs courtesy Vanton Pump & Equipment Corporation, Hillside, New Jersey.)

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tween the molded plastic body and the natural rubber flex-i-liner. No liquid touches metal. Flanges on the flex-i-liner straddle the pump body block and are pressed to its sides by bolted face plates, thus forming the isolated fluid channel. The pumping mechanism is a rotor mounted on an eccentric shaft which, at each revolution, pushes the flex-i-liner against the body block and sweeps a "slug" of $FeCl_3$ around a circular track from inlet to outlet. All bearings are permanently lubricated and are completely out of fluid area. They are further protected by a stainless steel assembly.

For more data circle **3** on Reader Service Card

★ ★ ★

Chromates Prevent Aluminum Corrosion in Pool-Type Nuclear Reactor

In the U. S. Naval Research Laboratory's pool-type nuclear reactor facility near Washington, D. C., a chromate conversion coating on underwater aluminum parts prevents parts from corroding during an indefinite time of submersion. This finish, known as Iridite No. 14-2, was supplied by Allied Research Products, Inc., Baltimore, Maryland.

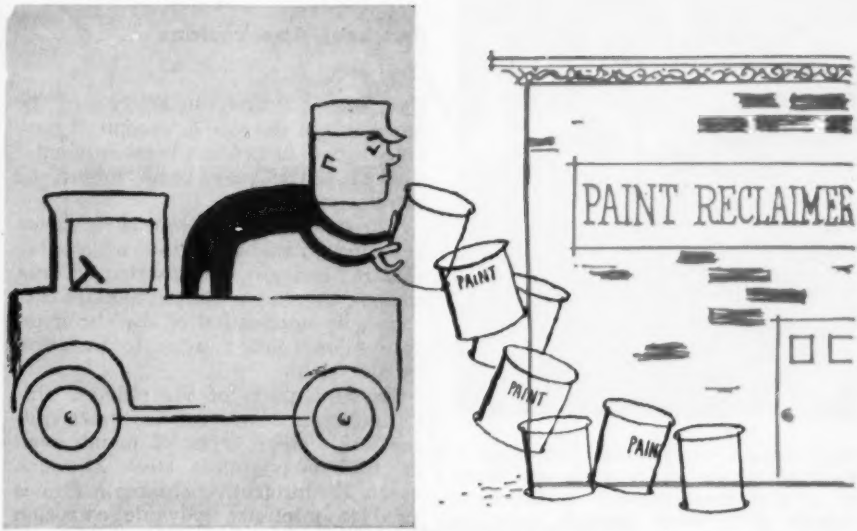
Corrosion prevention is extremely important in this installation. Reason: corrosion products formed would dissolve in the pool water, promoting galvanic cell action, which would attack the aluminum cladding of the fuel. If this thin cladding were pierced, the radioactive products formed by the splitting of uranium atoms would dangerously contaminate the pool and the air inside the building.

Many of the aluminum surfaces so finished are in the "core" of the reactor. The core is that portion of the installation that contains the fissionable material, Uranium 235. For safety and protective purposes, this core is constantly immersed in a pool of water 40 feet long by 26 feet wide by 20½ feet deep. The water in the pool is demineralized to a level of about 0.2 to 0.4 p.p.m. total hardness to minimize corrosion. It is interesting to note that the chromate coating on the core assembly itself is not noticeably affected by the neutron bombardment. It is expected that it will retain its protective characteristics indefinitely.

Aluminum parts are used for several reasons. First, exposure to radiation causes little physical change to aluminum. Second, aluminum does not become appreciably radioactive when exposed to neutrons. Third, unlike many other metals, aluminum does not have the ability to absorb neutrons (this would require more uranium fuel and reduce the neutron flux available for research). Aluminum has proved so satisfactory at the operating temperature of this reactor that even the atomic fuel itself is clad with a 0.02-inch layer of aluminum. This layer is also treated with a chromate conversion coating.

In addition to the underwater core supports, the same finish is used on various access doors leading into the pool below the water level. Since most of these above-water aluminum surfaces are, or will be, painted, the chromate conversion film aids both corrosion protection and paint adherence.

A shield assembly is located at one end of the pool. This unit serves two purposes. First, it contains the radiation from the atomic reaction inside



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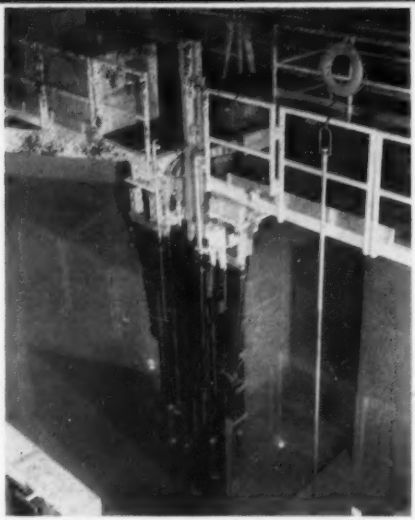

Fig. 1—Reactor core assembly submerged in the pool. Nuclear fuel is in the core. Many of unit's structural members are aluminum, finished with Iridite chromate conversion coating. Core is suspended from reactor bridge, mounted on rails to allow movement of core. (Official U. S. Navy photograph.)

Practical Applications . . .

the core, as does the water on the other side of the shield. Second, it provides access to neutron bombardments, through use of beam ports, for use in physics research.

These beam ports consist of holes cut through the shield into which aluminum casings are inserted. These casings, too, are protected against corrosion by application of the chromate conversion coating prior to insertion in the shield.

In some parts of the reactor, aluminum components are in direct contact with other types of metal, such as lead or stainless steel. In such cases, the protective chromate film is used to minimize galvanic corrosion that may occur when dissimilar metals are brought into contact.

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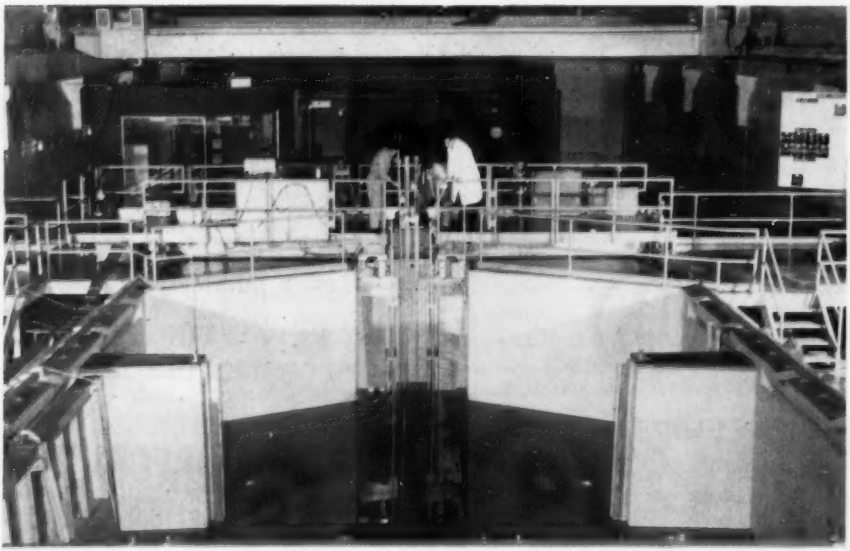

Fig. 2—Overall view of pool. Fuel element is being lowered into core. Dimensions of pool: 26 by 40 by 20½ feet deep. Capacity: 150,000 gallons of water. (Official U. S. Navy photo.)

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Practical Applications . . .

Butyrate Lacquer Solves Weathering Problem

A gold finish was used recently by an industrial equipment manufacturer to attract attention to his products at an industrial exposition. The products —vent valves used for chemical and petroleum processing equipment — were painted by the manufacturer, Black, Sivalls, & Bryson, Inc., with a gold-pigmented finish. The idea proved such a success that the company decided to try it on regular production models.

But this created a serious problem for the company's finishing department: the metallic-pigmented lacquer being used proved to be no match for outdoor weathering—it tarnished and deteriorated rapidly.

Fig. 1—Spraying gilt-pigmented, half-second butyrate lacquer on propane gas tank domes in plant of Black, Sivalls & Bryson, Inc., Kansas City, Mo. Non-gelling lacquer is supplied pre-mixed, for application as needed.

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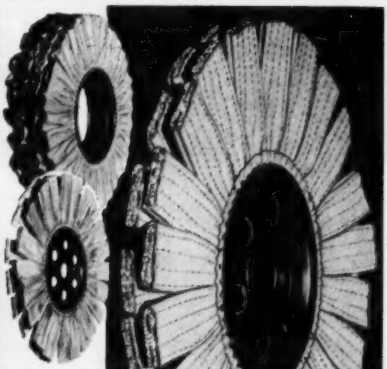

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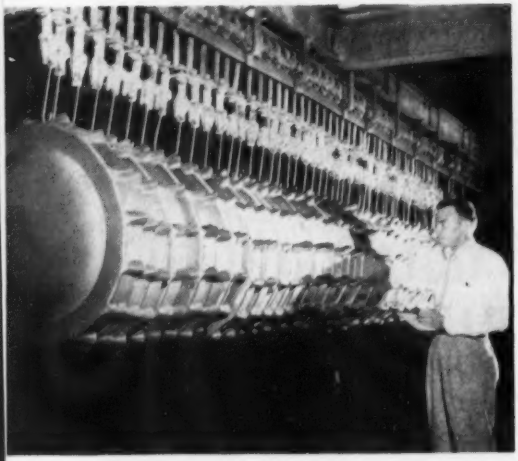

Fig. 2—Gold-painted ventilation crowns for grain storage bins are placed on drying racks after they have been sprayed with gilt-pigmented, half-second butyrate lacquer.

Fig. 3—These vent valves for petroleum and chemical processing equipment are coated with gilt-pigmented, half-second butyrate lacquer. (Photos courtesy Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co.)

In spite of this difficulty, the company's sales and advertising departments were persistent in their demands for the gilded parts on a conspicuous part of both their residential propane tanks and agricultural grain bins, as well as vent valves.

The problem was solved by M. L. Campbell Company, a Kansas City manufacturer of industrial finishes. The finish they recommended was a formulation based upon half-second butyrate, which, they said, would resist tarnish and give improved adhesion. The butyrate, a low-viscosity cellulose ester, was developed as a film-former by Eastman Chemical Products, Inc., Kingsport, Tenn., a subsidiary of the Eastman Kodak Co.

After testing the butyrate-based formulation extensively, Black Sivalls & Bryson estimates that this finish will withstand three to five years' outdoor exposure.

Although durability and non-tarnishing were the principal advantages of the butyrate lacquer, another benefit proved to be the reduction in application time on the production line.

The propane tank covers, which are fabricated of cold-rolled steel, are degreased with trichlorethylene, primed with a compatible zinc-chromate, and then spray coated with half-second butyrate gold lacquer. After an air dry of 15 minutes, the parts are ready for a final coat of clear alkyd lacquer.

The vent valve covers, formerly made of cast iron and now from cast aluminum, are treated similarly, except for a severe chromic-acid etch following the degreasing. The grain storage bin caps, made from galvanized steel, receive a phosphate etch, a rinse, a prime coat of zinc-chromate, and a finish coat of the butyrate-based gold lacquer.

One of the significant advantages found by Black, Sivalls & Bryson in handling half-second butyrate lacquer

To page 82→

SPECIALISTS

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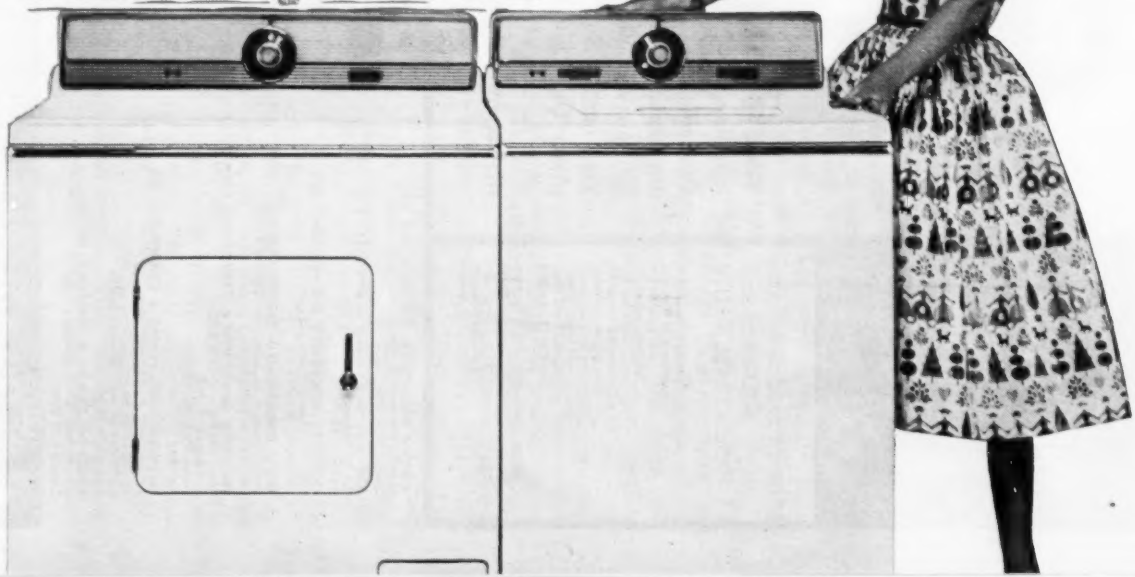

Here's how GLIDDEN helped bring the washer out of hiding

Fifty years ago, women used hand-operated, wooden-tub washers like the 1907 model in the drawing. Built for their utility value, not beauty, these units were generally kept on the back porch or in the basement.

Today's homemaker, however, knows that Glidden NUBELITE* enamel on her new automatic washer and matching companion dryer will add sparkling beauty to her home.

But, appliance manufacturers realize that a product finish must offer complete surface protection as well as beauty, must resist heat, corrosion and other damage, stay new-looking for years.

That's why leading manufacturers of appliances and many other products specify Glidden NUPON* primers and NUBELITE enamels for their finish schedules. They know that these superior product finishes provide all of the film-building and specific resistance qualities required for maximum appliance life.

*A Glidden Trade-Mark

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Industrial Finishes for Every Product

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was its ability to adhere equally well to four different metals: cold-rolled steel, galvanized steel, aluminum and cast iron.

For more data circle **5** on Reader Service Card

★ ★ ★

Polyester Duct Solves Plating Room Corrosion Problem

A glass-reinforced polyester duct and hood system installed recently in the plating, pickling and etching department of Thompson Products, Inc., Cleveland, has solved corrosion problems that are typical of plating room applications involving mild acid vapors, water and steam.

Thompson Products, Inc., is a manufacturer of automotive and aviation parts. One of this company's first major products was the Thompson Sodium-Cooled valve for internal combustion engines. These valves made possible the early high-compression internal combustion aircraft engines. Since the introduction of this sodium-cooled valve (which is still being manufactured), Thompson has branched into the production of many other parts, including jet engine turbine wheels, compressor blades, rotors and stators, and turbine nozzles and blades.

Thompson Products' polyester glass fume-removal system was designed, built, and installed by Haveg Industries, Inc., of Wilmington, Delaware.

The firm's Coit Road Jet Division Plant treats a variety of parts on both production-line and single-item basis. The pickle line at this plant includes straight nitric acid (35 per cent solution), and a nitric-hydrofluoric solution (30 per cent nitric and two per cent hydrofluoric). Some parts are cadmium plated, others are chromium

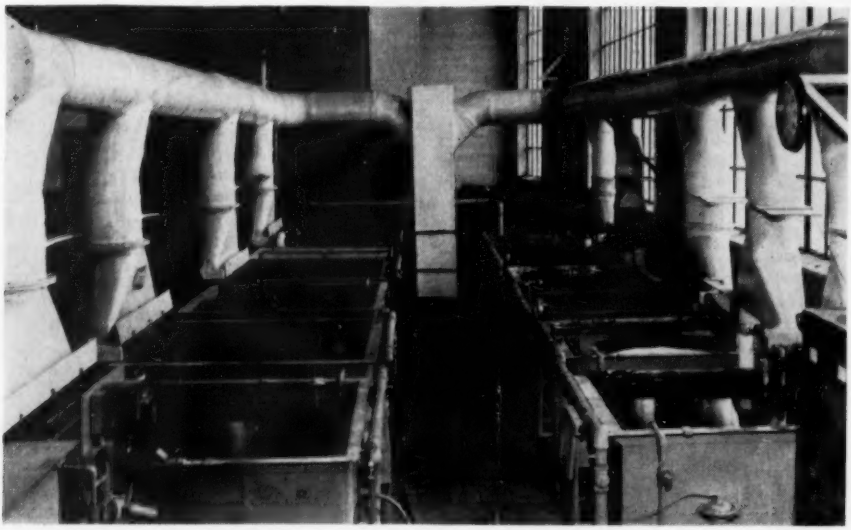
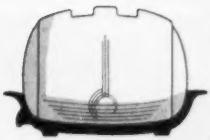


Fig. 1—Polyester-glass fume duct and hood system in the plating, pickling and etching department of Thompson Products, Inc., Cleveland. Pickles include straight nitric acid (33 per cent) and nitric-hydrofluoric (30 per cent nitric, 2 per cent hydrofluoric).

SUNBEAM Corporation finds...

Pre-finishing with 3M Abrasive Belts cuts appliance finishing costs



In the Chicago plant of this world-famous appliance manufacturer, 3M "Production" Resinite Abrasive Belts are used to pre-finish cold rolled sheet steel for toaster shells (picture at left, above). The company finds that by using a series of grits they can remove pits and surface imperfections in the steel—drastically reduce the subsequent finishing operations after stamping and forming of the toasters. Each 3M Belt finishes an average of 200 18⅜" x 96" steel sheets.

In another operation, this company uses Three-M-ite Resinite Cloth Belts to finish coffee pot shells prior to final buffing (picture at right above). The belts, used in 5 grit sequences on an automatic machine, prepare the surface of the shells by removing drawing and spinning marks.

You can put 3M Abrasive Belts to work in your plant, too. You'll find they cut costs, increase production. Get the facts from your 3M Representative, or send today for FREE booklet "Grinding and Polishing Appliances with 3M Coated Abrasives." Write Dept. FH-47, Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.

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plated, and others pickled and etched. (Some parts are titanium alloys.)

All of these plating operations require different processing. Twelve tanks are used. A monorail over the tanks permits handling of heavy products and smaller ones are handled individually or in baskets.

The Haveg hoods were installed and connected to the fume scrubber prior to filling the tanks with acid. Objectionable fumes occurred during the initial loading of the tanks due to excessive drafts and again during week-end shutdowns when the scrubber was turned off. These stray acid fumes caused corrosion of machine tools and parts in the area immediately surrounding the tanks. This problem was solved by eliminating the excessive drafts and operating the system and scrubber on a 24-hour-a-day, seven-day-a-week basis.

Three-inch pipes drilled out with ¼-inch holes have been installed on the front of each tank. Air is blasted through these holes over the surface of the tanks directly toward the fume hoods, thus reducing the fan load in the chamber above the washer. The ducts carrying fumes from the hoods are 12 inches wide and enlarge to 18 inches at the outer end of the system before they join the final 24-inch duct feeding into the fume-scrubber. The scrubber extracts acids from the air by means of a series of water sprays. Air is then exhausted over the roof of the

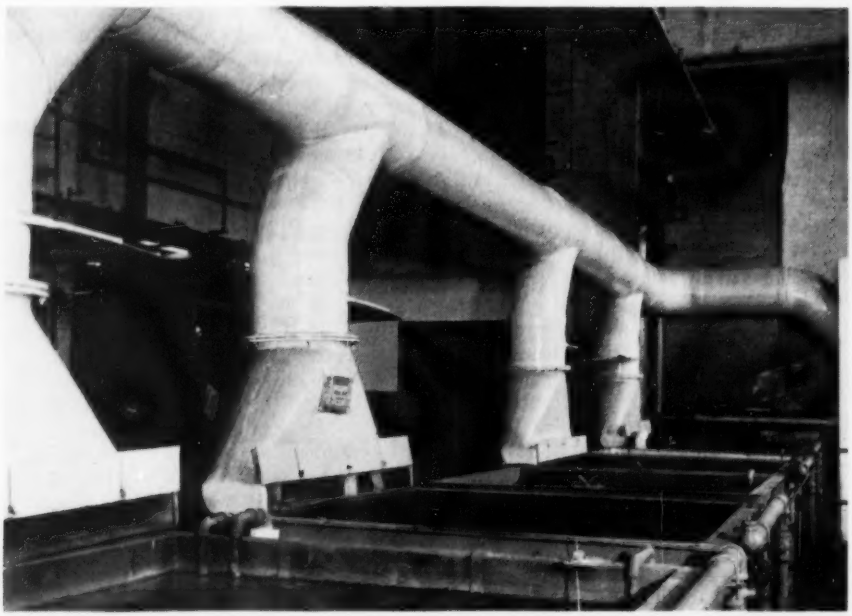

Fig. 2—Plastic duct system functions on a push-pull basis. Three-inch pipes over front edge of tanks blast air over surface of tanks, push air to ducts, reducing fan load. Fume scrubber and exhaust system run constantly. (Photos courtesy Haveg Industries, Inc.)

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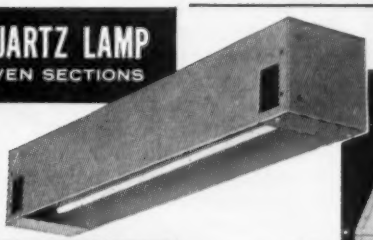

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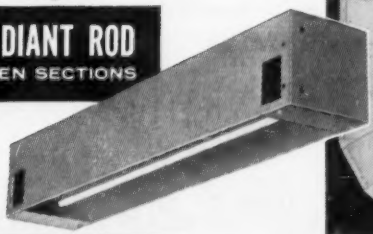
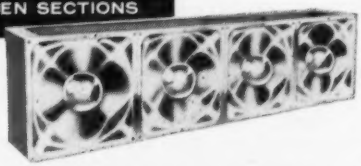
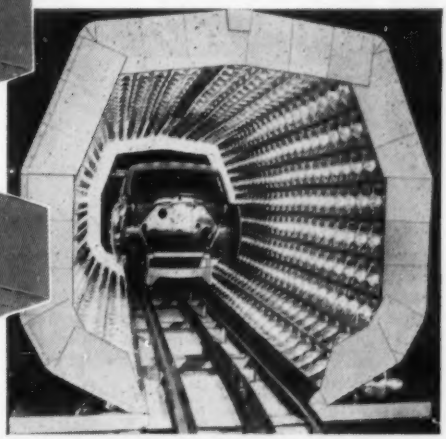


3 INFRARED LAMP OVEN SECTIONS





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plant. Polyvinyl chloride lines run from the fume scrubber and fan. The discharge chamber, connecting duct, and stack are of Haveg polyester glass. The plating and acid tanks are polyvinyl-chloride-lined steel. Hoods and all duct work are of polyester glass.

The duct system has shown no sign of deterioration in 10 months' use.

Full-time operation of the fume removal system has helped to eliminate corrosion of machine tools and parts being produced in the plant. And the fume scrubber allows no objectionable or dangerous fumes to be discharged to the atmosphere.

Thompson has found that polyester ducts need little maintenance. This type of duct has also been found to give good sealing around joints and to resist leakage of fumes at these points.

For more data circle **6** on Reader Service Card

★ ★ ★

HOW TO PREPARE ALUMINUM FOR PORCELAIN ENAMELING. An article discussing porcelain enameled aluminum appears in an issue of Oakite News Service, bi-monthly publication of Oakite Products, Inc., manufacturer of cleaning and metal-treating materials.

The article, in the September-October 1956 issue, deals with the need to clean, etch, deoxidize and remove smut from the aluminum surface to ensure permanent bonding of metal and porcelain. It explains how an alkaline etching solution of Oakite 130 is used to remove oil, dirt and aluminum oxide, and how Oakite 34 is then used to remove smut and prepare the metal for its caustic-chrome bath prior to slip-spraying and firing.

Copies of the Oakite News Service for September-October are available on request by writing to **Oakite Products, Inc.**, 20 Rector St., New York 6, New York.

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New Equipment, Materials, Processes

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Periodic Reverse Rectifier

A rectifier recently introduced by Sel-Rex Corporation, 155 Manchester Pl., Newark, N. J., permits periodic reverse plating at output ratings over 1,000 amperes. Developed in conjunction with Unit Process Assemblies, Inc., New York, N. Y., the unit is said to eliminate the need for separating anodes and cathodes into cells of 1,000 amperes each.

This rectifier is expected to be of interest to companies doing heavy electroplating or electroforming (where the periodic reverse method is used to eliminate nodules and other irregularities). A small control panel on the plating tank controls the unit, regardless of total amperage.

A specially designed magnetic amplifier control circuit maintains a current balance between units within three per cent, thus allowing periodic reverse units to function within specified ratings, regardless of how many are connected in parallel, the manufacturer states.

Sel-Rex engineers report that this periodic reverse rectifier affords greater versatility, in that much larger single pieces can be electroplated.

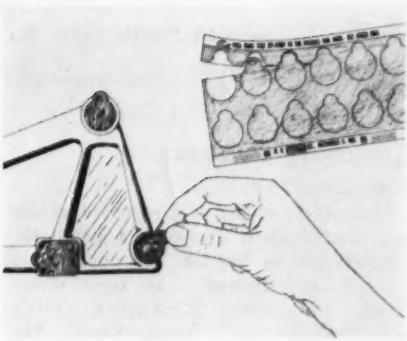
For more data circle **7** on Reader Service Card

Periodic Reverse Rectifier: over 1,000 amps.

★ ★ ★

Pre-Cut Masks

A pre-cut, self-sticking mask that can be removed quickly and neatly by means of a non-adhesive tab which is part of the mask has been developed by the W. H. Brady Co., Milwaukee, Wisconsin. Originally intended for masking hard-to-reach and recessed areas, the Tab Mask is useful wherever pre-cut masks are used—spray painting, anodizing and vacuum-metalizing.



Pre-Cut Masking Tape: tab aids in removal

The non-adhesive tab folds back out of the way when applied. To remove, grab the tab and pull. The Brady Tab Mask eliminates use of tools or sharp instruments often used to remove masks from a finished piece. There is less danger of scratching or marring a fine finish.

Brady Tab Masks are pre-cut in any shape, to exact specifications. They can be furnished in a variety of masking tapes to suit most finishing conditions of temperature, bake cycles and materials.

For a free testing sample of the Brady Tab Mask and literature on stock and special Brady Pre-Cut Masks, write to W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wis.

For more data circle **8** on Reader Service Card

★ ★ ★

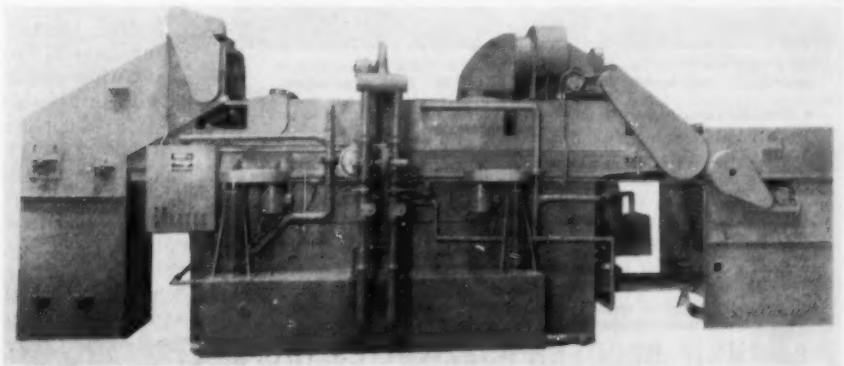
Cleaning Machine

An automatic cleaning machine recently announced by Ransohoff, Inc., prevents mixing of work and reduces manual handling. The machine is adaptable for any parts handled in tote pans, boxes or small containers.

The Ransohoff machine receives tote pans of work, dumps the work into a drum-type washing section, then carries the upside-down tote pan through an integral conveyor-type washing section above the drum section, where work is processed. Both work and tote pans are washed, rinsed and dried. Tote pans return to the discharge end of the machine ahead of the parts they formerly contained. Then the clean, dry batch of work is loaded, automatically, into the same tote pan.

This machine was designed and built for a wash, rinse and dry sequence but it can incorporate any combination of cleaning, pickling, phosphate coating and so on.

A single pump and motor recirculates solution to both drum and con-



Ransohoff Combination Drum and Conveyor Type Wash, Rinse and Dry Machine: for tote pans

veyor sections at each stage. Tanks are heated by gas-immersion tube, pressure-type gas burners and drying air is heated by a direct-fired burner. Tanks and drying air can be heated by steam, oil or electricity. The machine is approximately 28 feet long, 7½ feet wide and 11 feet high.

Further details concerning the various sizes in which the machine can be built may be obtained by writing to Ransohoff, Inc., 610 North Fifth St., Hamilton, Ohio.

For more data circle **9** on Reader Service Card

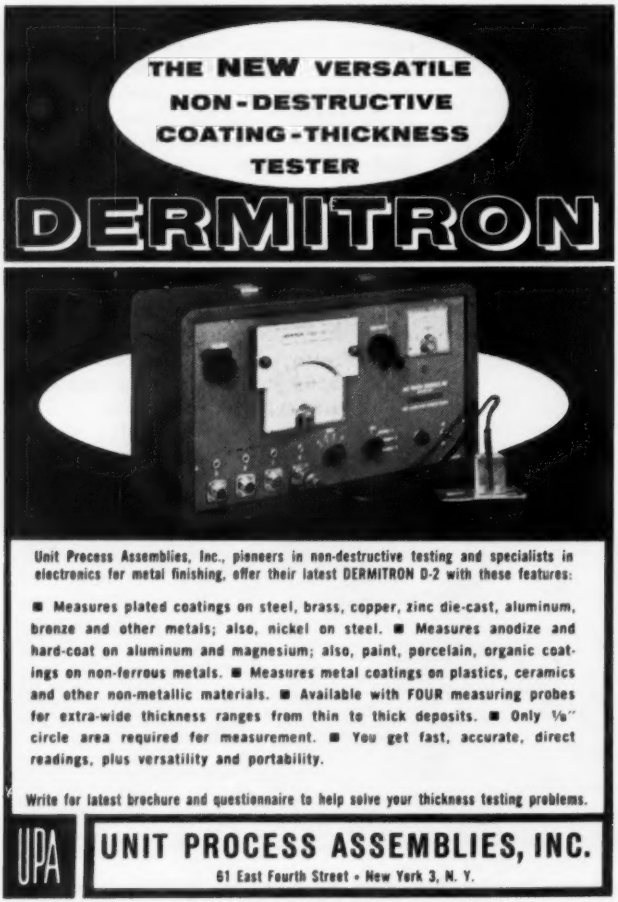
★ ★ ★

Cleaning Process for Copper

A surface-cleaning process for copper (both rolled and drawn products) that improves bonding properties and delays retarnishing, has been developed by Becco Chemical Division, Food Machinery and Chemical Corporation, Buffalo, New York.

The Becco process employs a water-solution of ammonium persulfate at room temperature, in which the copper is given a 30-second dip. Surface films are completely removed, the surface is slightly etched, and retarnishing is considerably retarded, it is stated.

Rolled copper, when used for laminating and in certain methods of producing printed circuitry, as well as in the fabricating of copper products, must be pickled to remove the accumulated tarnish and to prepare the copper surface for laminating, electroplat-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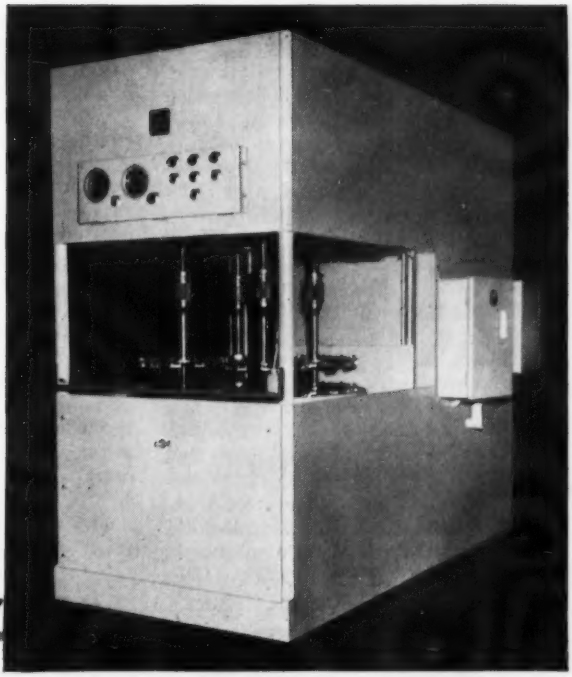

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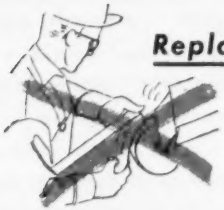

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- ☑ One-operation finishing of most complex parts
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GRAV-I-FLO CORPORATION

Dept. PF-4, 400 Norwood Avenue, Sturgis, Michigan

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ing, and other protective coatings. Drawn copper wire, before it can be coated for such purposes as magnet wire, telephone circuits and other electrical and electronic wiring, also must be cleaned before the insulating resin or varnish is applied.

The pickling solution in the Becco process is only mildly acid and does not develop dangerous fumes or spray.

Preliminary adhesion tests show excellent bonding properties for copper strip and wire which have been cleaned by the Becco process. And while tarnishing is not entirely prevented, evidence so far accumulated shows that it will be delayed for as much as two weeks, which is ample for most step-by-step processing of copper products.

Detailed information is available in Becco Bulletin No. 86, available from Becco Chemical Division, Food Machinery and Chemical Corporation, Station B, Buffalo 7, N. Y.

For more data circle **10** on Reader Service Card

★ ★ ★

Chemical-Resistant Cement

Haveg 7010, a silica-filled polyester resin composition, has been developed for use with brick and tile tank linings and for laying floors and walls in chemical processing areas.

This polyester cement resists a wide range of chemicals, including both acids and mild alkalis at high temperatures, and concentrated alkalis at room temperature. It also has good resistance to oxidizing agents. It is recommended for use at temperatures up to 265 deg. F.

Haveg 7010 polyester cement is supplied in two packages; one containing

To page 96→

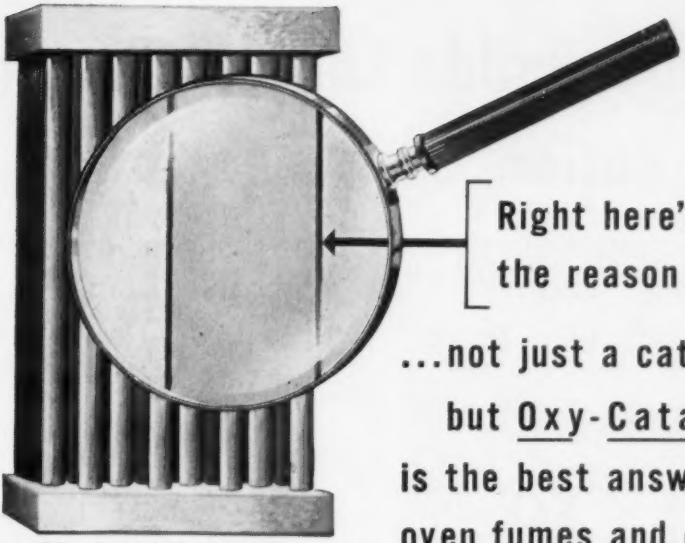
Deburring and finishing are rough on ordinary tumbling barrels.

Acme-Fisher Rubber Linings for tumbling barrels are tough, abrasive and chemical resistant. Specially formulated rubber linings are bonded securely to the inner walls, then cured, to form tough linings that will provide long service for the roughest deburring and finishing operation.

48 HOUR SERVICE
DIRECT FROM MANUFACTURER TO YOU

Acme-Fisher Division
BROADWAY RUBBER CORP.
529 E. Broadway **Louisville 2, Ky.**

For more data circle **353** on Reader Service Card



Enlarged cross-section drawing of an individual rod in an Oxycat unit

Right here's the reason...

...not just a catalyst but Oxy-Catalyst is the best answer to oven fumes and odors

The secret lies in the .003-in. film on the porcelain Oxycat carriers. It's this more efficient catalyst which Oxy-Catalyst uses, a patented combination of alumina and platinum on porcelain, that gives better cleanup, better heat recovery, and longer catalyst life.

Oxycats can eliminate fumes and odors from drying ovens and other processes by oxidizing organic and combustible contaminants in the exhaust far more efficiently than any other catalyst ever developed.

To stop your oven fumes and odors—to recover waste heat—to reduce fire hazards and maintenance problems caused by troublesome condensates, Oxy-Catalyst offers a complete engineering service. We make the entire installation—engineered to your exact requirements—and we assume full responsibility for the performance of the equipment.

Oxy-Catalyst works closely with all leading oven manufacturers. And new ovens can be designed with the catalyst as an integral part of the oven's heating system. So when you order new ovens, specify Oxy-Catalyst equipment.

If you would like to compare—to see for yourself the remarkably high efficiency of an Oxy-Catalyst installation—fill in this coupon, or write on your business letterhead, for complete information now.

Oxycat units were installed at the end of this vertical drying oven to oxidize troublesome solvent and varnish fumes at John A. Roebling's Sons Corporation, Electrical Wire Division Plant. This installation has been operating now for over 4 years.

OXY-CATALYST, INC.

Industrial Division, Wayne, Pa., U.S.A.

Fume Elimination Processes and Equipment
Industrial • Automotive • Consumer Products

Oxy-Catalyst, Inc., Industrial Division, Wayne 13, Pa.
Please send me complete information on your catalytic installations:

☐ For fume and odor elimination ☐ For waste heat recovery ☐ Have your representative call

Name_____

Firm Name_____

Street_____

City_____ Zone No._____ State_____

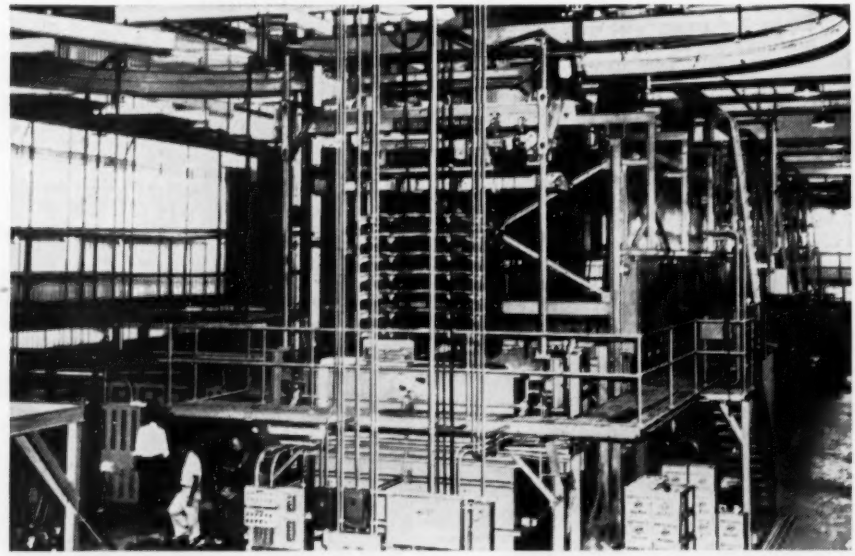
For more data circle **354** on Reader Service Card

Udylite Builds Largest Plating Installation On West Coast

Rheem Automotive Company greatly increases production capacity for automobile bumpers in completely new plant

IN an orange grove setting, near Fullerton, California, Rheem Automotive Company now has in operation the largest plating installation on the West Coast. It was designed and built by the Udylite Corporation under the supervision of the L. H. Butcher Company Division. Udylite furnished a complete "package" for the cleaning and plating facility.

Rheem manufactures the complete bumper right from panels of high tensile steel. Before plating, these panels are pickled, polished, bonderized, rinsed, formed and then transferred by an overhead monorail system to the plating department. Here in an area the size of a football field the



Bumpers loaded on plating racks are automatically transferred through this seventeen tank pre-plating unit giving chemically clean surfaces prior to nickel plating.

(Adv.)

bumpers travel through thirty-one operations.

Upon arrival at the plating department, ten to sixteen bumpers are placed on each rack in a floor level racking area. The racks, mounted on work carriers, are delivered automatically to the Udylite pre-plate unit by the monorail system. This automatic machine is 133′ long x 15′ wide x 22′ high. It operates hydraulically and routes the work through a pre-plate cycle including cleaning, spraying, acid dip and nickel strike.

After the cleaning and surface preparation the work carriers with their racks of bumpers are delivered selectively to either of the two nickel plating lines where they are then placed in the nickel plating tanks on a predetermined time cycle.

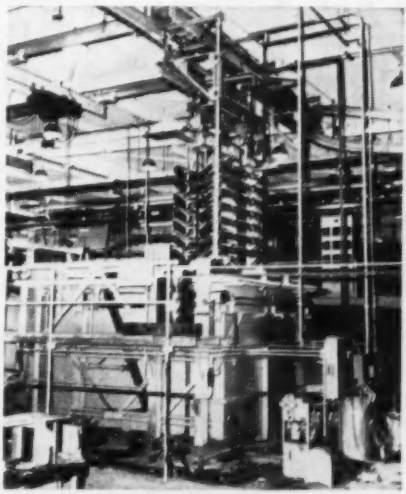
The nickel line consists of two sections each composed of sixteen tanks; twelve contain nickel plating solutions. Each nickel plating tank has conforming anodes and cathode bar agitation and contains 3,750 gallons of solution which is continuously filtered and heated by heat exchangers. Each tank is powered by a 5,000 ampere, 18 volt Udylite-General Electric Germanium rectifier with automatic stabilized voltage control.

Work carriers are picked up at the end of the nickel line and are transferred to inspection stations by means of the continuous monorail system, prior to final chromium plating.

After inspection, work carriers are automatically delivered to the chromium plating line and handled by a manually operated monorail system through a series of ten cleaning, rinsing and chromium plating tanks.

Then, after chromium plating, the work carriers are automatically picked up and delivered to an unloading area where the plated bumpers are removed for inspection and palletizing.

The new Rheem facilities are said to greatly increase plating capacity for automobile bumpers.



For more data circle **355** on Reader Service Card (Adv.)

a liquid resin, the other, a free-flowing powder. Powder can be stored almost indefinitely, the resin for more than six months.

Under normal conditions, equipment cemented with Haveg 7010 is ready for use within 18 to 24 hours.

Technical bulletin 8 on polyester cement is available from Haveg Industries, 914 Greenbank Rd., Wilmington 8, Delaware.

For more data circle 11 on Reader Service Card

★ ★ ★

Sprayable Plastisols

A series of sprayable plastisols has been developed for use on metal goods, production machinery, and castings. These vinyl coatings can be applied to any metal surface by standard spray finishing apparatus. Two basic compounds are available under the name of Flintlok, and five by the name of Tufkote. Auburn Button Works, Auburn, N. Y., offers a custom-compounding service that provides for the modification of these seven basic compounds to meet specifications.

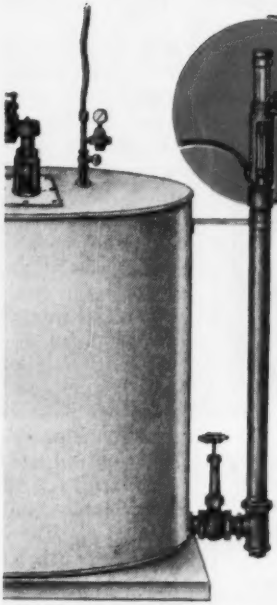
Flintlok 40 bonds to metal surfaces without a primer undercoat, and presents a surface that is resistant to abrasion. Flintlok 41 has the same characteristics but includes a suspension of fine metallic flakes that provide the sparkle of silver or the glitter of gold. Flintlok 42 is also identical to No. 40 but comes in metallic lus-

TROUBLE IS OFTEN OPPORTUNITY IN WORK CLOTHES!
ALKALI IKE
.. and we take this opportunity to offer you a trouble-free method of preparing steel for painting—
APEX "169" Cleaning and Coating Compound
Easily adapted to the simplest procedure for cleaning and phosphatizing steel parts prior to finishing. The amorphous chemical coating formed will provide maximum rust resistance and greatly enhance paint adhesion.
Your Inquiry Will Be Appreciated.
Apex ALKALI PRODUCTS CO.
A complete line of Cleaning Compounds for the Metal Finishing Industry
Main and Rector Streets • Philadelphia 27, Pa. • IV 3-3939
SYRACUSE BOSTON DETROIT ATLANTA PITTSBURGH WEST HARTFORD
For more data circle 356 on Reader Service Card

for more than 2 years*

*Since June 1954

the NEW air-operated BALCRANK® Jet Power PUMPS



for paint have been working constantly on a high production schedule thru 2 shifts (16 hours) and occasionally a third shift . . . in one of the largest automotive plants in the U. S. . . . pumping heavy abrasive red-oxide primer . . . *No other* pumping equipment on this installation *survived more than 2-3 weeks.*

THE BALCRANK PUMP

for Paint—operating here with a simple standpipe assembly—may be installed on any standard 2" bung opening or coupling—or open end drums.

For over 50 years—Balcrank has served the Machine Tool and Automotive industries, specializing in pressure-pumping of oils, greases, viscous and abrasive materials.

Now—this *NEW* air-operated Jet Power Pump for PAINT is available for immediate shipment to you.

Here's the
NEW CATALOG

We'll send you a FREE copy.

Balcrank pumps have already established unique performance records. Our Engineering Staff can adapt this experience to your needs. Address your inquiries to Dept. 24.

INDUSTRIAL
BALCRANK®
PUMPS

Write • Wire • Phone
BALCRANK INC.
42 Disney Street
Cincinnati 9, Ohio

© 1956 BALCRANK INC.

50 YEARS of SERVICE

For more data circle **357** on Reader Service Card

ters and opalescent sheens.

These finishes resist chemicals of all kinds. They are suitable for application to interiors of storage tanks and all processing equipment subject to corrosion, to shop machinery and many types of industrial apparatus, to appliances, office machines and equipment, carrying cases, metal furniture, toys, vehicles, farm machinery, and all metal products.

The Tufkote plastisol sprays provide a variety of textures ranging from shiny or satin surfaces to pebble, wrinkle or leather grain. They fill and cover rough, pitted, or porous metal surfaces.

Tufkote also has excellent insulation properties: it is warm to the touch, has sound-deadening qualities, and serves as a good electrical insulator.

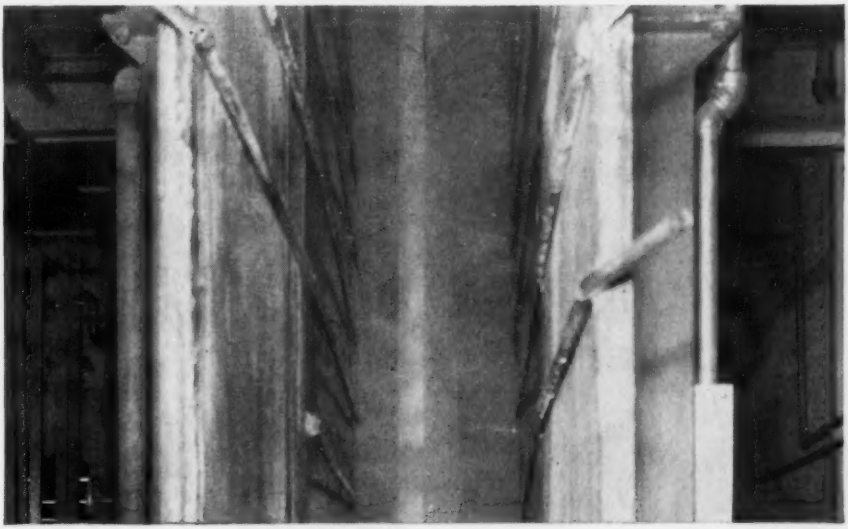
Flintlok and Tufkote vinyl spray finishes share certain other characteristics. They are unaffected by cold, heat, salt air and water, do not absorb moisture, and resist mildew and fungus, it is stated. They also resist most chemicals, including acids, alkalis, and solvents. They make excellent stop-off coatings for acid baths and plating purposes.

The finishes are available in many colors. Electrostatic or any conventional spray finishing equipment may be used, after which the coating is cured.

A complete brochure that describes and gives applications for these chemical compounds and lists their charac-

CLOTH
BUFFS
ZIPPO
• High Count, Heavy Duty, Bias-cut Cloth.
• Extra folds provide wider buff face and greater compound holding capacity.
• Ventilated Steel Centers.
• Perfectly balanced sections require no raking.
FORMAX BUFFS—These famous fast cutting and long wearing buffs continue to set the standard of performance for bias-type cloth buffs. You can depend on uniform quality from shipment to shipment.
Write for Descriptive Literature
FORMAX MFG. CORP.
DETROIT 7, MICHIGAN
"THE FOUR McALEERS"
For more data circle 358 on Reader Service Card

REPORT NO. 5 / ON LOWERING TODAY'S COST OF PRODUCTION



Combined cleaning-phosphatizing speeds production, lowers costs

One pound of Divobond per 1,000 square feet of work

Where equipment, stock and operating conditions permit, the entire organic finishing pre-treatment cycle can be speeded up without any sacrifice in product quality. As work passes through a Diversey Divobond phosphatizing spray, soil is rapidly penetrated, flushed away, and a tightly adherent iron phosphate coating covers the metal. Surfaces are left with the uniform, iridescent appearance of a quality phospate treatment.

Divobond's unusually high cleaning action (for a phosphatizing compound), makes one operation cleaning-phosphatizing a reality in many plants where the two operations had been divided. The result is faster production and lower compound requirements.

Divobond is so effective, only one pound is required to *clean and phosphatize* 1,000 square feet of work. Since Divobond coatings are tightly adherent, should the finish be broken, the phosphate coating will not fracture to expose the base metal. This safeguard against rust is an important reason why Divobond is favored for manufacturing many consumer items.

For illustrated literature on Divobond and No. 519, write to The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

PLANTS IN CHICAGO, NEWARK, AND SOUTH GATE, CALIF. WAREHOUSES IN PRINCIPAL CITIES.

DIVERSEY. DIVOBOND

For more data circle 359 on Reader Service Card

teristics is available on request. Write to Chemical Division, Auburn Button Works, Inc., Auburn, New York.
For more data circle 12 on Reader Service Card

★ ★ ★

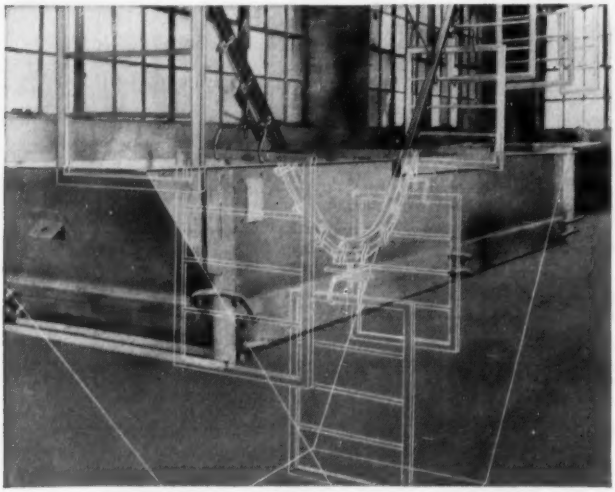
Cutlery Polisher

Clair Manufacturing Co., Inc., Olean, N. Y., has introduced Model No. 402 polishing machine, a glazer and mirror finisher for cutlery and related products. This machine is suitable for surface finishing operations on blades or handles, flat or contoured, and can be converted to an "edger" in a few seconds.

It incorporates several safety features. Body contact with an emergency bar simultaneously opens the rolls and shuts off the machine. When the work rack is withdrawn the rolls open automatically, and rolls will not close again until the rack has been properly placed in the guide-ways.

A central panel control box includes a flush-mounted ammeter and pressure gage, which permit accurate correlation of roll contact pressure by means of an adjustable automatic pressure regulator. All operating adjustments can be made without stopping the machine.

Floating action of the rolls helps to assure uniform contact pressure, regardless of taper, the manufacturer states. Rolls are open as the work is placed into the machine. Predetermined maximum contact pressure can be applied



BUSCHMAN Conveyors cut the cost of raising and lowering windows!

Shortened de-greasing tank saves valuable floor space in this modern plant . . . one of the many profitable advantages introduced by the BUSH-LOCK "Universal" Overhead Cable Conveyor for the cleaning and coating of aluminum window frames.

Cut your operational costs. BUSCHMAN packaged stocked parts provide a conveyor system tailored to your plant's specific needs.

Write for bulletin No. 41

PRODUCE MORE . . . FOR LESS Buschman CONVEYORS

C-335-EWB

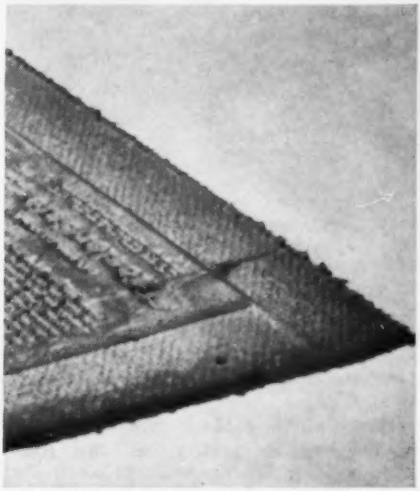
Buschman will cooperate with industrial washer or oven equipment manufacturers whenever your plant is being surveyed.

THE E. W. BUSCHMAN CO.
4516 Clifton Ave., Cincinnati 32, Ohio

For more data circle 360 on Reader Service Card

Better work, less waste with "Plus-4" Anodes

TYPICAL TREEING that occurs when using ordinary electrolytic tough pitch copper anodes.



MINIMUM TREEING illustrates one of many savings with "Plus-4" (Phosphorized Copper) Anodes.

The Cincinnati Electrotype Co., of Cincinnati, Ohio, switched to Anaconda "Plus-4" Anodes and now tells its customers on its advertising blotters:

"We use PHOSPHORIZED COPPER because it has . . .

1. Finer, smoother *Grain Structure*. Retains the true value of modern type faces, dot formations of halftone, and tone value of multicolor engravings.
2. Over-all *Uniformity* of shell thickness, longer plate life, reduces replacement costs.
3. Greater *Tensile Strength*, maximum resistance to abrasive and chemical action of colored inks.
4. Sturdy *Backup* for Nickeltypes.
5. Better *Adhesion* for chrome."

From an operating standpoint, Cincinnati Electrotype is also enthusiastic. "Plus-4" Anodes cut waste from treeing (shown above), from solution correction and from sludge. With electrolytic tough pitch copper anodes, they used to clean sludge from tanks 3 times a year. Tanks filled exclusively with "Plus-4" Anodes will run a year or more without cleaning. They also report a time saving of 30% or more in a normal plating cycle when using "Plus-4" Anodes.

It will pay you to see for yourself how Anaconda "Plus-4" (Phosphorized Copper) Anodes can save you time and money—give you better work. Send the coupon today.

57141

"PLUS-4" ANODES

(Phosphorized Copper)

A product of

ANACONDA

Made by The American Brass Company

The American Brass Co., Waterbury 20, Conn.
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.
Give me details on how I can get a test quantity of "Plus-4" Anodes sufficient to supply one tank.

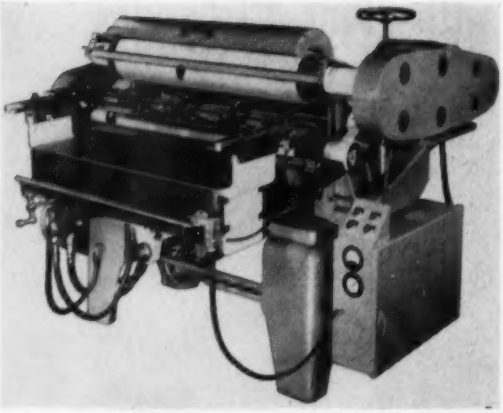
NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE....STATE.....

For more data circle 361 on Reader Service Card



Clair Model No. 402 Polisher: for cutlery

without burning blade tips, since the blades are in motion as the rolls contact them.

Rapid loading is possible, using pre-loader layout jigs. The operator has both hands free at all times to take the racks in and out of the machine.

Clair Model No. 402 is powered by two 10-h.p. spindle motors and one two-h.p. hydraulic pump motor.

For more data circle **13** on Reader Service Card

★ ★ ★

Cleaner for Aluminum

A non-foaming cleaner that removes identification inks, grease, oils, and other heavy soils from aluminum has been announced by Oakite Products, Incorporated.

Called Oakite Aluminum Cleaner No. 164, it has been specially compounded to clean without foaming in agitated tanks. Even without agitation its ability to remove difficult soils is said to be excellent.

Used at 6 to 8 ounces per gallon of

To page 106→

Rhodium

ELECTROPLATING SOLUTIONS

Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications; can be applied in extremely heavy deposits, where required, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

Consult our staff, without obligation, about your specific plating problems.

SIGMUND COHN MFG. CO., INC.

121 SOUTH COLUMBUS AVENUE, MOUNT VERNON, N. Y.

Specialists in the Unusual... SINCE 1901

For more data circle **362** on Reader Service Card

INDUSTRIAL ENGINEER AT ALCO VALVE CO. REPORTS . . .

"We stepped up parts production 700% by deburring and polishing with ALMCO EQUIPMENT"

MR. HAROLD KRAUSHAAR, Industrial Engineer at Alco Valve Co., St. Louis, shows solenoid valve parts barrel finished with Almco equipment.

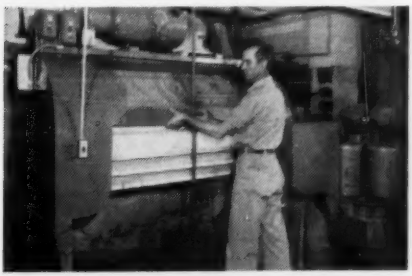
KEEPING PACE with over-all stepped-up plant production requirements was not easy at Alco Valve when it came to finishing of piston and plunger valve parts. Stainless steel screw machine parts were being deburred and polished by hand at the rate of slightly over 200 per hour.

In addition, stricter finishing specs were calling for 25 micro-inch on both plungers and pistons, further increasing man hours.

FINISHING PRODUCTION SOARED — After lab analysis of typical parts by Almco engineers, an Almco Model DB-400 barrel finishing machine was installed. Production rate on deburring and polishing rose from 200 per hour to over 1400 per hour — a direct increase of 700%! Plant production schedules were met without difficulty.

REJECTS PRACTICALLY ELIMINATED—The Almco method of deburring and finishing not only mastered the stricter micro-inch requirements, but cut rejects to a bare minimum. Hand operations were completely eliminated. Costly variables were no longer present.

DESIGNED FOR MANY METAL FINISHING OPERATIONS — Almco equipment and processes are also used for descaling, degreasing, grinding, burnishing, work-hardening, rust-inhibiting, etc. Write for address of Almco sample processing lab or branch office in your area. Your sample parts will be processed promptly to your specifications. No obligation for complete report!



Deburring and polishing of piston parts is a smooth one-operation process at Alco Valve. After O.D. centerless grinding and angle seating, parts are processed to tight specifications in this Model DB-400 Almco machine.

SEND FOR FREE 52-PAGE BOOK

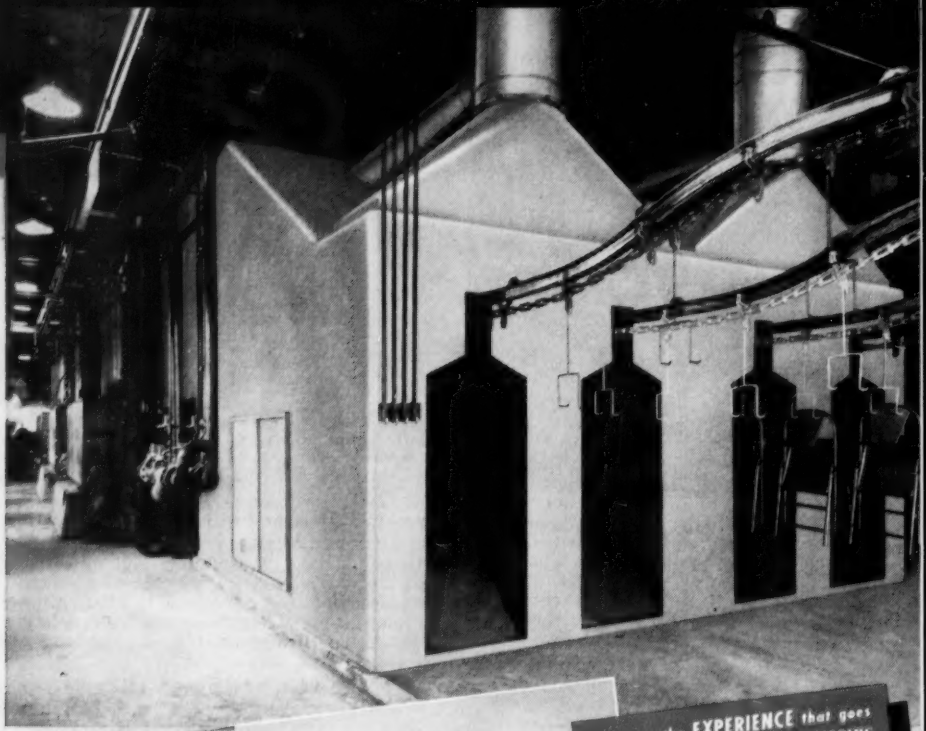
Full of facts and processes on barrel finishing. Includes detailed cost chart on finishing of typical parts. Send for your copy today.

ALMCO

DIVISION OF QUEEN STOVE WORKS, INC.
84 Marshall Street • Albert Lea, Minnesota
Sales and Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven, Philadelphia and London, England

For more data circle **363** on Reader Service Card

COMPLETE



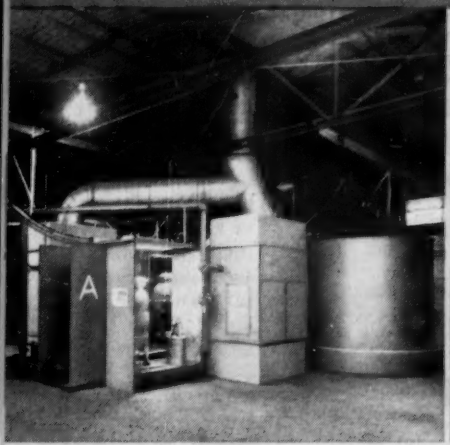
. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE** to **YOU!**

Illustrated on these pages is a Complete Mahon Finishing System installed recently in the Durham Manufacturing Company's Plant in Muncie, Indiana. Above is the Four-Production-Line Metal Cleaning and Surface Preparation Machine. At left is the Ramp-Tunnel up to the Finish Baking Oven Located on the Roof. Both Ramp-Tunnel and Finish Baking Oven are designed to Accommodate Four Parallel Conveyor Lines.

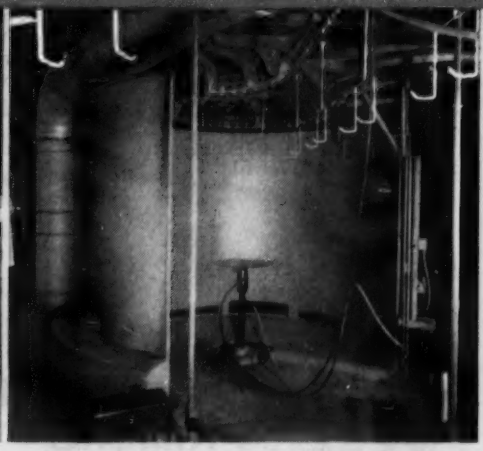
M

Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



One of the Four Separate Painting Units in this System. Each of the Four Production Lines Passes through Identical Equipment —Two Electro-Spray Enclosures and a Touch-up Spray Booth.



One of the Eight Mahon Ventilated, Circular Electro-Spray Enclosures Employed in the Four Separate Painting Units in this System. Note Provisions for Control of Air Movement.

NEW, Complete MAHON FINISHING SYSTEM Provides FLEXIBILITY and ADDS Greatly Increased PEAK PRODUCTION CAPACITY!

A new and highly efficient Mahon Finishing System at Durham Manufacturing Corporation, Muncie, Indiana, gives management needed flexibility and greatly increased maximum painting production capacity. Four parallel painting production lines pass through the entire system. The Metal Cleaning and Surface Preparation Equipment, Dry-off Oven, Cooling Tunnel and Finish Baking Oven are designed to accommodate four parallel conveyor lines. Each of the four conveyor production lines passes through one of four separate painting arrangements—each of which includes two circular Electro-Spray Enclosures and a touch-up Spray Booth. The entire System is designed so that two of the painting production lines can be shut down—the processing equipment is divided for this purpose. An ultramodern Finishing System of this type provides a manufacturer like Durham with painting equipment that meets peak production demands and also permits operation at 50% capacity with the same efficiency and economy. If you are contemplating new finishing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the all-important planning, engineering and coordinating of equipment. See Sweet's Plant Engineering File for information, or write for Catalog A-657.

THE R. C. MAHON COMPANY, Detroit 34, Michigan • Branch Offices in New York and Chicago

Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow Coaters and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

MAHON

water, at temperatures between 160 and 180 deg. F., solutions of Oakite Aluminum Cleaner No. 164 are completely safe on aluminum and its alloys, it is stated.

Further information about this material is available from Oakite Products, Inc., 20 Rector St., New York 6, New York.

For more data circle **14** on Reader Service Card

Roller Coater

A roller coating machine with a built-in safety device that helps to eliminate hand and arm injuries has been announced by Union Tool Corporation, Warsaw, Indiana.

A release handle runs the full width of the roller coater and is located immediately in front of the operator. If the operator should catch his hand in the machine, or should an emergency arise, the operator depresses the safety release handle. This operates a latch pin which in turn releases the complete lower roll assembly—including rolls, infeed table, pick-off fingers and supply pan. The assembly rotates forward and down, thus creating a space between the upper and lower rolls. The complete operation is virtually instantaneous.

To reset the lower roll assembly, the operator uses a wrench to turn a cam bar located on the side of the machine. The cam bar is turned until the assembly contacts a fixed stop, at which point the latch pin, being spring-loaded, automatically engages, locking the assembly in operating position. The fixed stop eliminates any need

Once tried—
Always used . . .

STANTITE
PRIMERS

STANTITE Wash Primer (#66R-3157A) with Thinner (#80R-342) prevents oxidation of non-ferrous metals – and corrosion creep in ferrous metals. Other advantages . . . excellent bonding qualities, extremely quick drying and easy handling. Can be topcoated with practically all types of finishes.

Try STANTITE Wash Primer or any primer in the complete STANTITE line . . . then compare with any other on the market. You'll stick with STANTITE.

WRITE FOR DATA SHEETS ON STANTITE PRIMERS . . . TODAY!

STANLEY CHEMICAL COMPANY*
Subsidiary of The Stanley Works
DEPT. D, 1468 BERLIN STREET, EAST BERLIN, CONN.
**Member, Vinyl Dispersions Division, S.P.I.*

STANLEY

See Stanley first for finishes that last
LACQUERS • SYNTHETICS
VINYLS • ENAMELS

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS

For more data circle **365** on Reader Service Card

Meet the Sel-Rex Family of Industrial Precious Metals...

BRIGHT GOLD

A mirror-bright finish directly from the bath — more dense and twice as hard as ordinary gold. One gram does the job of two grams of conventional 24 K Gold.

Patent pending

SILVREX BRIGHT SILVER PROCESS

Crystal-clear solution that produces mirror-bright deposits. Economical to use—stable one-addition agent brightener. Easiest to control.

Patented

BRIGHT RHODIUM

Brilliant, fine-grained, non-tarnishing deposits. Best for all decorative applications. Available in phosphate or sulphate formulations.

RHODEX

The only rhodium electroplating process that yields compressively stressed deposits. Eliminates costly rejects due to cracking or peeling. RHODEX will not increase fatigue failures of base metal as ordinary rhodium electroplate does.

Patent pending

FUR-A-SALTS

Barium double metal cyanides. Restore contaminated cyanide plating baths to full, trouble-free production —"knocks out" carbonates, sulphates and chromates. Minimize waste disposal problems.

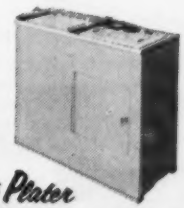
Patented

SILVER SOL-U-SALT

Non-dusting—safest and easiest to use. Cost-cutting—added directly to the bath without filtering. Won't upset silver to cyanide ratio.

Sel-Rex plating engineers are constantly searching for precious metal processes that will provide industry with the inherent characteristics of a particular precious metal but eliminating the weaknesses. The Sel-Rex Family of Precious Metals Processes to date are used world-wide, giving the electronic and electrical industries and product design engineers new and better plating tools.

Complete installation and servicing on all precious metals processes.



Jet Plater

A complete versatile, small-volume plating unit for precious metal plating. Incorporates built-in rectifier with timer and other automatic features.

Precious Metals Division

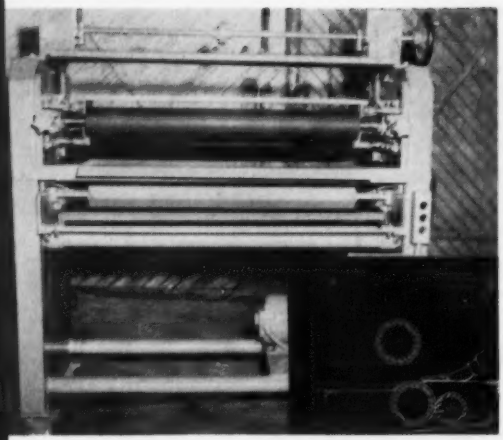
SEL-REX CORPORATION

155 MANCHESTER PLACE • NEWARK 4, N.J.

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies.

Offices: Detroit—Chicago—Los Angeles

For more data circle 366 on Reader Service Card



Union Tool Roller Coater. Inset shows how rolls part to protect hands from injury

for readjustment of the lower roll assembly after the latch pin has been engaged.

This safety feature has been incorporated on all models of Union Roller Coaters except Model 5.

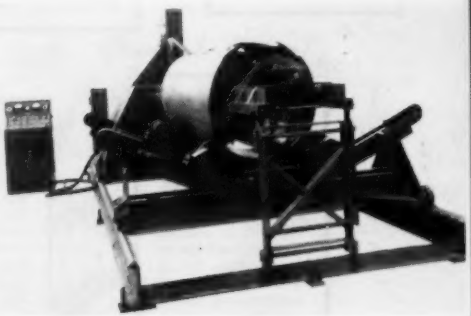
For further information, write The Union Tool Corp., 233 N. Detroit St., Warsaw, Ind.

For more data circle **15** on Reader Service Card

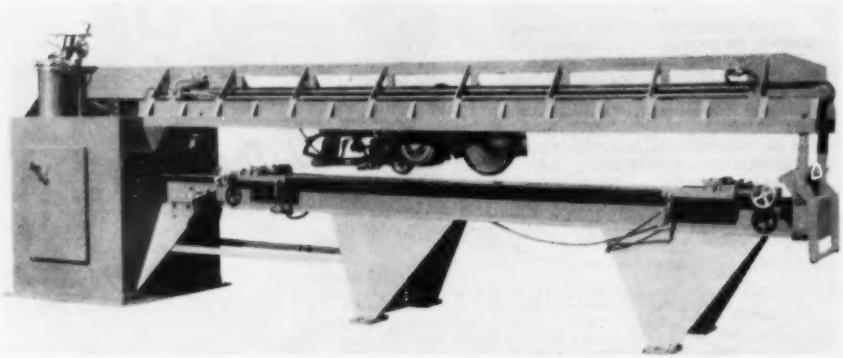
Polishing Equipment for Tanks

Three coated abrasive belt machines designed for grinding and polishing large-diameter tanks (such as those used in the dairy, chemical and food processing industries) have been developed by the Hi-Lite Polishing Machine Co., Inc., Sheboygan, Wis.

The machines are a seam weld grinder and polisher, an ID tank grinder and polisher, and a tank-head grinder and polisher. All three are used along a tank manufacturer's production line. Coated abrasive belts for the machines have been especially de-



Tank Grinder and Polisher: inside diameters



Hi-Lite Seam-Weld Grinder and Polisher: for seam welds on flat sheets or open-end tanks

Only American CENTERLESS BUFFS give you 7 KEYS to GREATER OUTPUT!

7 TYPES SUIT EVERY JOB!
U.S. Pat. No. 2,582,506
Centerless BIAS CLOTH Buff
Centerless BIAS SISAL Buff
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Centerless (Sewed) UNIT CLOTH Buff
Centerless (Unsewed) UNIT CLOTH Buff
Centerless OPEN BIAS SISAL Buff
Centerless PLEATED CLOTH Buff

Exclusive PRE-ASSEMBLY means FEWER Changeovers . . . FASTER Changeovers

Patented American "Centerless" Buffs *run cooler . . . last longer . . .* allow *faster machine speeds* without burning. *FEWER* changeovers!

Patented "Pre-Assembly"* permits making up complete buffing heads (up to 100 sections each) *in advance . . .* for *instant* replacement in a *single operation.* *FASTER* changeovers!

* U. S. Pat. No. 2,599,785

This is why

American CENTERLESS BUFFS

Guarantee 25% to 33⅓% more production

In most plants, the two biggest cost-items are Labor and Overhead (including Equipment) . . . almost 80% of total buffing costs! Revolutionary American "CENTERLESS" Buffs help you *reduce* these costly factors . . . *increase* production per man-hour and machine-hour!

27% more output on aluminum castings

33⅓% more output on brass

Certified Gains
WE CAN DUPLICATE IN YOUR PLANT
Ask for demonstration!

30% more output on copper

31% more output on steel

American Buff Company

2414 S. La Salle St., Chicago 16, Ill. • CAlumet 5-1607

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signed by Minnesota Mining and Manufacturing Co., St. Paul, Minn.

The Seam-Weld Grinder and Polisher is designed to handle seam welds on flat sheets or open-end tanks with a minimum of 30 inches in diameter, up to 10 feet long. Other machines are available to accommodate tanks of greater lengths.

Controls for the grinder, which has a traversing head, are centered in a console. The traversing mechanism has adjustable stops to regulate the length of travel.

Coated abrasive belt speed is 6,500 s.f.p.m., and the grinding head has a traverse speed of 20 f.p.m. An automatic cutting oil applicator operates only when the belt is in contact with the work.

Depending on the weld, belt widths run from ½ inch to 2½ inches. Close accuracy is possible so as not to undercut the weld or disturb the finish on either side of it.

A gantry-type seam weld grinder is also available for grinding welds where multiple steel sheets have been joined.

For polishing the inside diameters of open-end cylindrical tanks, Hi-Lite has designed an ID Tank Grinder and Polisher which produces a uniform longitudinal scratch pattern. The machine is designed for tanks ranging from 33 inches to 20 feet in diameter, and up to 12 feet long, and utilizes a 6-by 148-inch coated abrasive belt.

The abrasive belt is mounted on

To page 114→

Metal Parts Washers—Phosphatizing Units —Hydra-Spray Pickling Equipment

Metal parts are cleaned and processed by means of pressure sprays which converge on the parts from all angles. Solutions are heated to required temperatures by gas, oil or steam immersion heaters. Spray solutions remove foreign matter and perform metal treatment as required.

For Bulletins and Quotations, write to:

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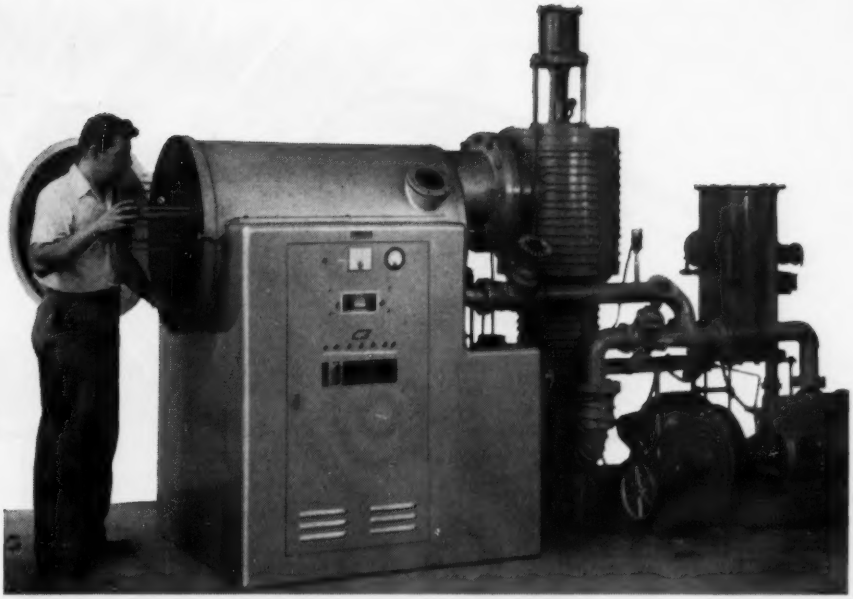

Proof that you don't have to be big to get into vacuum metallizing

With one of these CEC 30-inch coaters, you can earn sizable profits in vacuum metallizing just as the large finishers do.

And you can start with a surprisingly small capital investment.

Designed specifically to meet the needs of small and medium-sized finishers, the LC1-30 is compact, easy to operate, and economical to maintain.

Production rates? Fast. Very fast. For example, you can coat about 400 pieces 1½" in diameter per cycle. With just a little training most operators complete *five to seven cycles an hour.*

Recent developments in protective lacquers have made vacuum metallizing even more practicable—by making the gleaming finish more *durable* than ever.

If you would like more information on the LC1-30 (and a bulletin on lacquers), write for Bulletin 2-28.

Consolidated Electrodynamics

Rochester Division, Rochester 3, N. Y.

formerly Consolidated Vacuum

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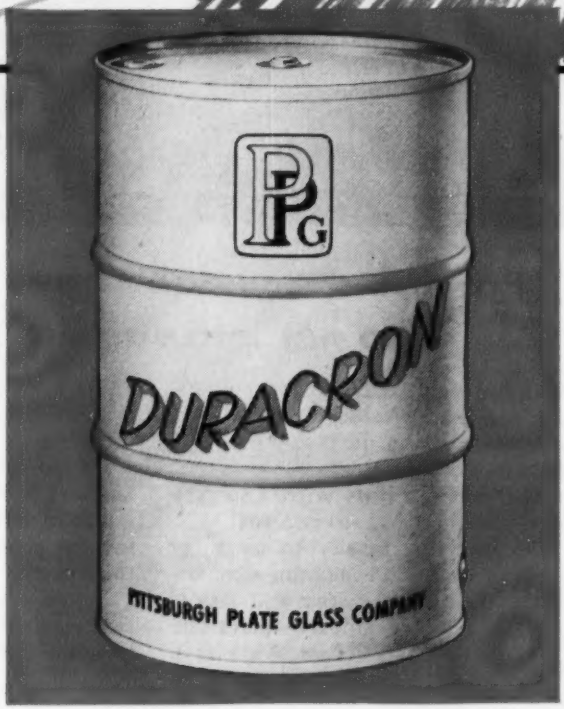
DURA



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Thermo-Setting Acrylic Enamel

Sets a new standard for industrial finishes in toughness, mar resistance and durability

- **Pittsburgh's new DURACRON** is a revolutionary departure from today's baked enamels. It is a basically new chemical composition developed for the finishing of refrigerators, home laundry equipment, ranges and air conditioning units.
- **It has superior adhesion** to bare metal or primer. It is remarkably tough and durable either as a one-coat enamel or over primer. It retains color and gloss for prolonged periods at temperatures up to 400°F. DURACRON also provides greater resistance to detergents, will not show stains from grease, fruits, mustard, etc. It withstands effects of salt spray, humidity and other corrosive atmosphere. In short, it's a sanitary, taste-free, mar-proof liner for food cabinets.
- **New DURACRON** can also be used advantageously on many other products to improve performance of enamels now used. We'll gladly provide you with additional information. Mail coupon below to Pittsburgh Plate Glass Company, Industrial Finishes Division, 1 Gateway Center, Pittsburgh, Pa.

Pittsburgh Plate Glass Company, Industrial Sales Division,
1 Gateway Center, Pittsburgh, Pa.

Gentlemen: Please send me additional information about your revolutionary new DURACRON.

Name_____

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a traversing grinding head which lifts from the work at the end of each pass, allowing the tank to be rotated. The amount of overlap of each successive belt pass can be closely controlled, and the rate of carriage travel is variable. All controls are centralized on a master panel.

The ID Tank Grinder and Polisher is approximately 8 feet wide by 22 feet long, and has a belt speed of 6,500 s.f.p.m. with a traverse speed of up to 20 f.p.m. The abrasive belt is lubricated with an automatic oil-spray device.

A companion machine to the seam and ID grinders is the Hi-Lite Tank Head Grinder and Polisher, which operates on the basic principle of a swing grinder. The unit is designed so that the operator has full vision of the point of contact. The machine utilizes a 1-inch, 1½-inch or 2-inch coated abrasive belt running over a serrated rubber contact wheel, with a belt speed of 6,500 s.f.p.m.

The head grinder can be used on either the inside or outside of pressed or spun stainless steel tank heads. The standard model head grinder will accommodate tank heads up to 6 feet in diameter.

Further information about the machines is available from the Hi-Lite Polishing Machine Co., Dept. F7-49, Route 2, Sheboygan, Wis. Coated abrasive belt information will be supplied by the 3M Company, Dept. F7-49, 900 Fauquier St., St. Paul 6, Minn.

For more data circle 16 on Reader Service Card

SPRAYING SYSTEMS
SPRAY NOZZLES
better in every way
DESIGN—based on advanced research and engineering.
CAPACITIES—the most complete nozzle selection in the field.
TYPES—full cone, hollow cone, flat spray, square spray, straight stream and pneumatic atomizing.
MATERIALS—brass, stainless steel or any other required material.
IDENTIFICATION—all nozzles clearly stamped for easy identification and re-ordering.
PROMPT SERVICE—inventory of over 12,000 TYPES maintained for prompt delivery.
Whatever your need, you will find Spraying Systems products and service of real advantage.
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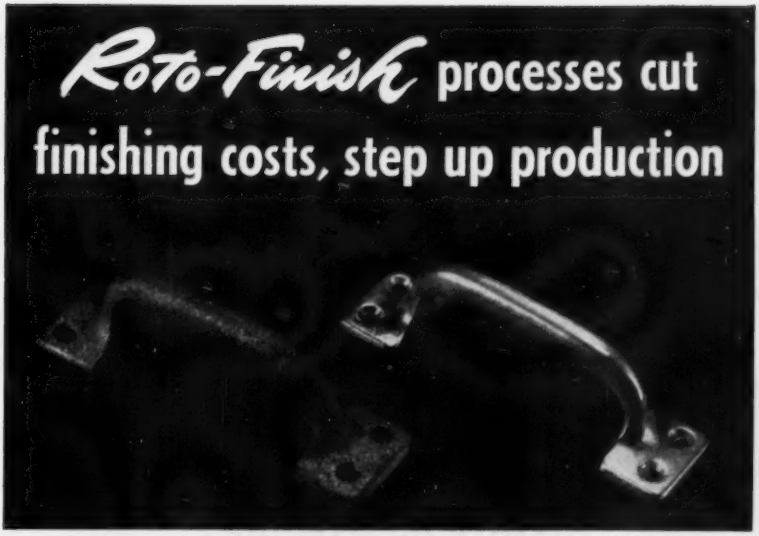
SPRAYING SYSTEMS CO.
3229 Randolph Street • Bellwood, Illinois
ADVANCED SPRAY NOZZLE DESIGN FOR NEW DIMENSIONS IN CONTROL AND PERFORMANCE
For more data circle 371 on Reader Service Card

Roto-Finish processes cut finishing costs, step up production



Savings on deburring, descaling, grinding, polishing, coloring and surface improvement by Roto-Finish barrel finishing processes are tremendous. Expensive hand finishing methods can be eliminated.

Roto-Finish Chips, Compounds and Machines are of the highest quality—Roto-Finish has never sacrificed quality for the sake of price. A continuous program of improvement of processes and products gives you better performance.

Roto-Finish guarantees results—There is no costly trial and error involved in the purchase of Roto-Finish equipment. You submit unfinished parts to Roto-Finish along with a finished sample and a description of the finish you require. These sample parts are processed by Roto-Finish to determine the right process to do the job. Roto-Finish guarantees to reproduce the same results in your plant, using Roto-Finish processes, that are achieved in sample processing.

Send for this Free Technical Data Folder

Roto-Finish

ROTO FINISH

COMPANY

3704 Milham Rd., Kalamazoo, Mich.

P. O. Box 988
Phone FI 3-5578

For more data circle 372 on Reader Service Card

Safety Solvent

A safety solvent recently developed by The Penetone Company is formulated for cleaning metal parts, machinery and equipment. Called Antiox-Type-R, it is a corrosion inhibitor as well as solvent cleaner.

This material deposits a protective coating against corrosion and rust while degreasing. This protective coating is colorless, dry, non-tacky, transparent, and non-toxic.

Literature describing Antiox-Type-R can be obtained from The Penetone Co., Box 88 PF-3, Tenafly, N. J.

For more data circle **17** on Reader Service Card

★ ★ ★

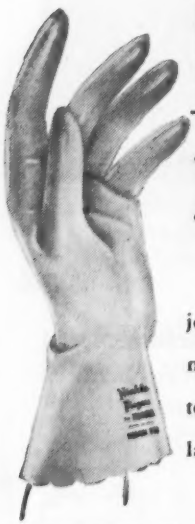
Cold Galvanizing Process

Danton Corporation has announced a cold galvanizing process called Galvoplate. A metallic coating of 95 per cent pure zinc base that combines with the base metal, setting up electrical continuity and offering cathodic protection, it can be applied with either a brush or spray gun.

No special pretreatment is required. Galvoplate can be applied to any clean metal surface. Because of this it can also be used to arrest corrosion that has already started. In places where corrosion has started, it is necessary to remove all the loose scale before applying Galvoplate, the manufacturer states.

The coating is said to be an excellent base for decorative finishes.

A technical bulletin on the proc-



NEW! Tissue-Thin Pylox™ Gloves

Nimble Fingers™

by PIONEER

Thinner than surgical gloves for jobs requiring extreme finger sensitivity. Wear all day in comfort. Resists normal acids, alkalis, oils, greases, some solvents. Smooth outside, textured inside . . . reversible for non-slip grip. Sizes small, medium, and large. Let PIONEER help you select proper gloves for your job from the complete PIONEER line.

The PIONEER Rubber Co.
285 Tiffin Road, Willard, Ohio, U.S.A. V-10

Please send me:
The name of my nearest PIONEER Glove Distributor.
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Hand Protection Clinic glove recommendation for job described in enclosed letter.

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Mail This Coupon Today

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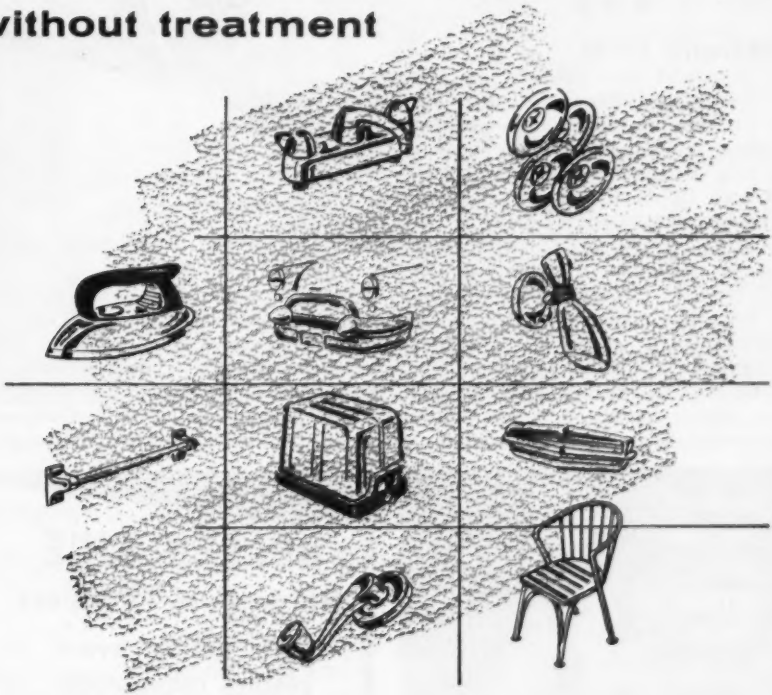
HARSHAW Nubrite

Long, bright nickel plating operation without treatment



Other outstanding advantages are:

BRIGHT OVER WIDE RANGE
from a few amperes/ft.^{2}
to well over 100 amperes/ft.^{2}

HIGH TOLERANCE to common impurities

HIGHLY RECEPTIVE to chrome

EXCELLENT LEVELING

BETTER BRIGHTNESS with thinner deposits.

SIMPLE OPERATION and CONTROL
Plates brightly from 120°F to 155°F.
pH can vary over a wide range.
Liquid addition agents.

REMAINS DUCTILE AFTER LONG OPERATION

For additional information contact the Harshaw office nearest you.

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For more data circle **374** on Reader Service Card

ess is available from Danton Corp., 339 Auburn St., Auburndale 66, Mass.
For more data circle **18** on Reader Service Card

★ ★ ★

Backstand Idler

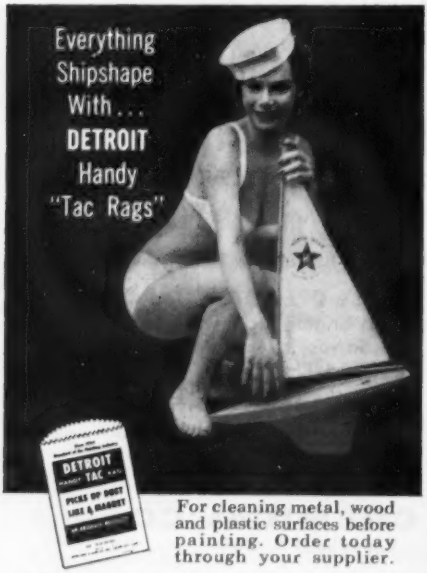
A backstand idler designed to provide operating convenience as a belt idler for grinding and polishing lathes has been announced by Fenlind Engineering Company, 5602 Pike Rd., Rockford, Illinois.

Known as the Fenlind L-610, it incorporates a number of features which make it adaptable to most applications, from precision work with narrow belts to heavy roughing operations.

Linkages consisting of telescoping remote control arms and universal joints permit mounting both tracking and tension arms at any position — above or on the front of the polishing lathe—to suit the operator's convenience. The telescoping feature facilitates adjustment of the control arms to accommodate belts of any length.

Both lateral and radial adjustments of the pulley are effected through a

The Fenlind Model L-610 Backstand Idler



For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

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Standard of the Finishing Industry Since 1934
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GOLDEN LINE
Germanium Rectifiers

A model for every plating requirement

Efficiency at low cost.

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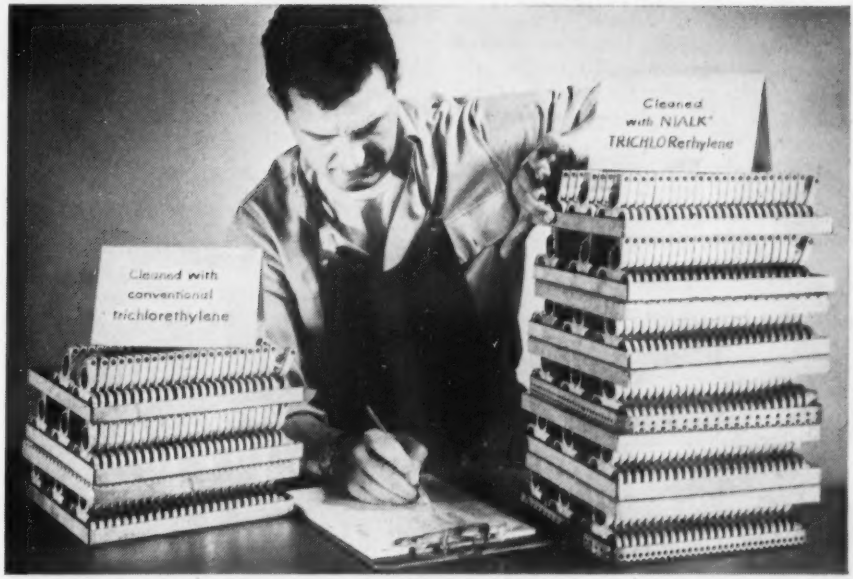

Operator using NIALK TRICHLORethylene cleans more parts, because NIALK has **psp**, which prevents acid contamination, reduces number of cleanouts.

Why you get **more effective degreasing** when you use NIALK® TRICHLORethylene with **psp**

There's a big, cost-cutting difference between NIALK TRICHLORethylene and conventional vapor-degreasing solvents.

Light, heat, air, acids, and active metals such as aluminum can break down improperly stabilized solvents, making them unfit for further degreasing.

Nialk stabilizer has psp—permanent STAYING power. You *never* have to replenish the stabilizer in NIALK TRICHLORethylene. It's neutral, non-alkaline, works equally well with *all* metals.

psp means cheaper degreasing. Even after repeated distillations, this unique NIALK stabilizer actively retards the formation of degradation products in your bath.

You don't have to clean the bath so often. You can degrease more parts between cleanouts.

Get proof of Nialk's cheaper, safer cleaning. Write on your business letterhead for a revealing resumé of comparative metallurgical tests made on NIALK TRICHLORethylene and four other leading brands.

HOOKER ELECTROCHEMICAL COMPANY

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HOOKER CHEMICALS PLASTICS

Manufacturers of VIRGO® DESCALING SALT, VIRGO ELECTROLYTIC SALT, VIRGO MOLTEN CLEANER 6-1613

For more data circle **377** on Reader Service Card

patented tracking linkage, which is operated by a single tracking control arm. This feature facilitates adjustment of the pulley for all types and weights of belts from one-half inch to six inches in width.

Belt tension is adjusted by means of the other remote control arm. A spring-loaded device on the idler makes possible a complete range of adjustments, from an accurately controlled light tension for narrow belts to a greater tension for wide belts.

The heavy-duty aluminum alloy pulley of the L-610 is radially crowned for correct trackage and prevention of wear.

For more data circle **19** on Reader Service Card

★ ★ ★

Aluminum Pretreatment

An improved zincate bath, called "Alkalume," for treating aluminum

To page 124→

the scale that has everything

OHAUS TRIPLE BEAM BALANCE

STAINLESS STEEL PLATE and BEAMS

widest selection • greatest capacity

Models available with undivided tare beam.

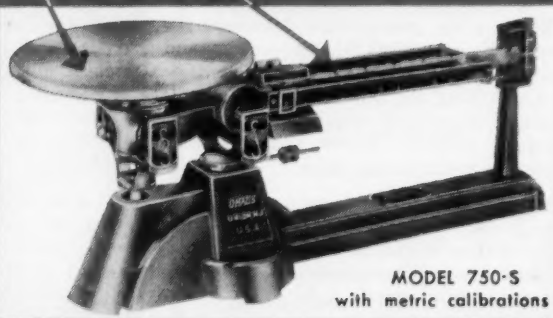
Choice of stainless steel plate, removable pan or scoop, or animal subject box.

Selection of METRIC, AVOIRDUPOIS or GRAIN standards.

• BEAM CALIBRATIONS
Front Beam 10x1/10 gram
Center Beam 500x100 gram
Back Beam 100x10 gram

• SENSITIVITY
0.1 gram

• SCALE CAPACITY
Scale capacity without attachment weights..... 610 gram
Scale capacity with attachment weights ..... 2610 gram



MODEL 750-S
with metric calibrations

for complete information write for brochure . . . . .

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"PROOF of THE FINISH is in THE OVEN"

...to a great extent.

We're inclined to base this statement on the testimonies of the many manufacturers we have been privileged to serve.

High volume, high quality finish production is almost a necessity everywhere today.

Users of our oven designs and installations tell us they are accomplishing this with comparatively low operating costs.

This makes for satisfaction all around.

Typical Quotes from Many of the Satisfied Users of LANLY Ovens in Diversified Industries

"Our paint appearance and gloss has improved considerably since we installed the New *LANLY BAKE OVEN.*"

R. O. R.

"We bake twenty-two colors in pastel shades on metal. With the LANLY OVEN we have experienced highly satisfactory results in obtaining uniform color and complete baking."

K. W. B.

We'll welcome the opportunity to discuss your drying and baking operations with you without obligation.

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LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE
CLEVELAND, OHIO

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News about UNICHROME Trade Mark

Simple bronze plating

- *M&T copper-tin process deposits extraordinary, golden-glow decorative plate*
- *Also cuts need for nickel as undercoat*

M&T Bronze gets the trophies. Golden-glow finish for die cast trophy cups wins over copper-nickel-gold formerly used by leading producer.

What's news in tin anodes

Two types of M&T Anodes are available for tin plating processes.

M&T "High Speed" Tin Anodes, developed for stannate baths, have wider effective current density range than ordinary anodes. Taking higher currents without becoming passive, they speed up plating. They form *darker,* more recognizable working film. They pass more current for a given voltage.

The other type, M&T Pure Tin Anodes, are designed for work both in acid baths and alkaline baths. They're cast from highest purity tin. Send for data.

New economy in chromate finishing

Several newly developed Unichrome Dip Compounds work at extreme dilutions. They offer chromate solutions with still lower make-up and operating costs than previously delivered by economical Unichrome Dips. These new Dips make it practical to preserve shelf life and appearance of galvanized, zinc plated or die cast items, even those having low unit price or narrow margin of profit.

process gives gold-like finish

BRONZE plating has proved itself a practical finish in large and small installations. The copper-tin process developed by Metal & Thermit eliminates usual difficulties and disadvantages in alloy plating. It is as easy to operate and control as normal processes depositing a single metal.

Equally important, this bronze can be deposited with brilliant 24K gold color by using a trouble-free brightener. Protected with a clear organic coating, it provides a high quality decorative finish with unusual appeal and long life. Overall cost of this bronze rivals that of copper and is less than that of a brass plate.

VALUABLE UNDERCOAT

As an undercoat, M&T Bronze has these qualifications: Good corrosion resistance; hardness better than copper and virtually equal to nickel; more ductility than nickel.

Undercoat-bronze can be plated semi-bright or matte. Both buff more readily than copper and with less chance of cut-through on edges.

OPERATIONAL ADVANTAGES

M&T Bronze offers better than twice the speed of fast copper plating solutions. There are numerous installations working at normal current densities of 60-75 amps per sq. ft. Densities of 100 amperes deposit over one-tenth mil a minute smoothly.

Golden-glow bronze delivers uniform color on intricate decorative work. So outstanding is its throwing power, it is being used to replace copper on complex automobile parts. It uses single anode circuits, and copper anodes which corrode uniformly. The tin is supplied by potassium stannate additions, assuring simple, economical control of the process. Send for data.

Unichrome is a trademark of Metal & Thermit Corp.

METAL & THERMIT
CORPORATION
General Offices: Rahway, New Jersey
Pittsburgh • Atlanta • Detroit
East Chicago • Los Angeles
In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

For more data circle 380 on Reader Service Card

prior to plating, is said to deposit a fine-grained, uniform coating in one pass; reduce adhesion problems; lower surface tension (resulting in faster draining and reduced dragout); and tolerate chrome better, assuring continuous operation and longer life.

Alkalume, a product of Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich., is harmless to rack coatings and has no objectionable odor.

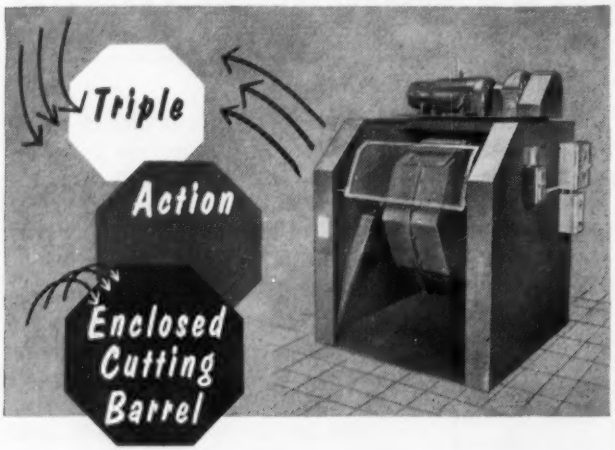
For more data circle **20** on Reader Service Card

Automatic Blast Cleaning

Cleaning and descaling parts in large volume is the task for which the fully-automatic Blastmaster Barrel made by Pangborn Corporation, Hagerstown, Md., was designed. All operations of the Blastmaster Barrel including materials handling, weighing, starting and stopping the rotation of the barrel are automatic.

In a high-volume operation, several automatic Blastmaster Barrels can be grouped in a line. They receive dirty castings from the shakeout by means of a conveyor feeding the loading skip at each machine. After the cleaning cycle, one belt conveyor serving all the barrels in the group takes the clean, descaled parts to the next operation.

The cycle begins with loading of the skip by the incoming conveyor. When a load of predetermined weight is in the skip, a switch automatically stops the feeding conveyor. When the blasting cycle in the barrel is completed and the load discharged, the skip is automatically raised, thus dumping the



The Finest Cutting Barrel Ever Made

Hartford's great new enclosed barrel speeds deburring, descaling, polishing on screw machine parts, stampings, and castings. Hartford's unique *Triple Cutting Action* produces the highest degree of uniformity . . . faster . . . at lower cost. Extremely compact with every modern feature for efficiency, safety, and cleanliness. Available in 4 and 10 cu. ft. barrel capacities. Write for complete literature.

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PRECISION BALLS • RETAINERS
BEARINGS • TUMBLING BARRELS

HARTFORD STEEL BALL CO., INC.
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Whatever your finishing requirements may be a PACKER-MATIC is the machine for you. Cost conscious mass producers have recognized the need for high speed, automatic polishing and buffing machines. Let Packer's engineering and developing departments recommend a PACKER-MATIC to meet your demands for faster, more uniform, low cost polishing, buffing and deburring. Send blueprints of parts or samples and we will tell you what PACKER-MATIC can do for you or write for more complete information today.

The finishing touch on cosmetic items is just one of many successful PACKER-MATIC applications.

PACKER-MATIC

THE PACKER MACHINE COMPANY • MERIDEN, CONN.

Pioneer Manufacturers of Automatic Polishing and Buffing Machines

For more data circle **382** on Reader Service Card

dirty castings into the barrel. The skip returns to the loading position and is immediately filled with another load of dirty castings. The door of the barrel shuts, the barrel rotates, and the Rotoblast wheel throws the abrasive. After a predetermined period, the wheel stops and a short period of tumbling takes place, to drain abrasives from the work. With the barrel stopped, the door is opened. The barrel's rotation is reversed, and the cleaned castings are dumped from the barrel onto another conveyor, which takes the castings to the next step in processing. The skip dumps in a new load and the entire cycle is repeated.

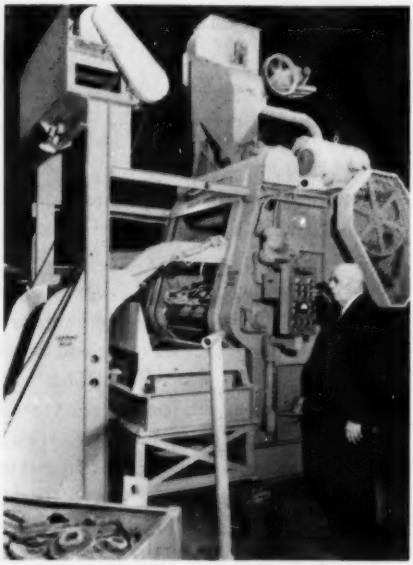
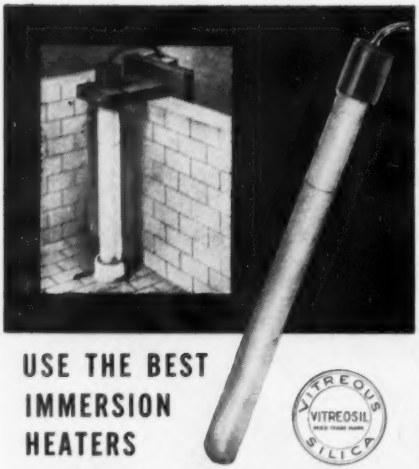


Fig. 1—Loading skip bridges unloading conveyor when raised to deliver rough castings to Blastmaster Barrel. Entire cleaning cycle is automatic, including materials handling. Each phase can be controlled separately, if desired, by push-buttons on the control board.



USE THE BEST IMMERSION HEATERS

VITREOUS SILICA — VITREOSIL

U.S. Patent No. 2,654,820

Compact, safe and efficient, VITREOSIL® electric immersion heaters offer you your most dependable units. Designed for acid pickling and electroplating solutions and other acid baths, VITREOSIL heaters give greater heat transfer per unit area and greater resistance to chemical attack.

VITREOSIL immersion heaters are made of pure fused silica and have special corrosion-resistant caps, built-in ground wires for additional protection and easily visible minimum immersion depth markings.

VITREOSIL immersion heaters will serve you best. Write for bulletin and prices.

THERMAL AMERICAN FUSED QUARTZ CO., INC.
18-20 Salem Street, Dover, New Jersey

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Company _____

Name _____ Title _____

Street _____

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For more data circle 383 on Reader Service Card

Get the results you want from Wyandotte's Barrel-Finishing Compounds

BURNEK 22—Minimum running time gives exceptionally brilliant luster to brass, copper, nickel, silver and gold. Low cost, uniform results.

ALTREX®—For quick cleaning, cut-down, de-burring of steel, aluminum, brass, die castings. An economical, all-purpose de-burring compound.

BURNEK 452—Nonfoaming, free-rinsing combination cleaner-burnisher for steel, stainless steel; quickly develops high luster.

BURNISHING COMPOUND 321—Nontoxic brightening agent easily removes light tarnish; excellent for zinc, brass, copper, bronze, steel, stainless steel, gold.

A.E.—Powdered acid compound for brightening steel, stainless steel, brass, copper. Removes scale, rust, tarnish, spot-weld marks, flux from brazing operations.

BARREL FINISHING can be an especially economical way of finishing parts when you use one of Wyandotte's barrel-finishing compounds.

You see, Wyandotte produces de-burring and burnishing compounds to cover all phases of your finishing operations. Each of these products has been tested, proven in operation; each will lower your over-all costs through low use-costs.

Whatever your finishing problem—from paper clips to zinc die castings—there's a Wyandotte product to solve it—efficiently, economically. Why not call your Wyandotte representative today. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

Wyandotte CHEMICALS

J. B. FORD DIVISION

THE BEST IN CHEMICAL PRODUCTS FOR METAL FINISHING

For more data circle **384** on Reader Service Card

A 12-cubic-foot Blastmaster Barrel is shown in Fig. 1. It is equipped with a Rotoblast wheel 19½ inches in diameter with 3-inch throwing vanes. A Pangborn CH-3 self-cleaning dust collector controls the dust created. All phases of the cleaning cycle can be controlled separately and manually.

For more data circle **21** on Reader Service Card

Plastic Blowers

Blowers constructed of rigid unplasticized polyvinyl chloride plastic for resistance to corrosive gases and fumes have been introduced by Industrial Plastic Fabricators, Inc., Norwood, Massachusetts.

These centrifugal blowers are fabricated entirely from unplasticized PVC. They are built to withstand most chemical fumes and polluted air in a temperature range of 40 to 140 deg. F.

The blowers' steel drive shafts are completely insulated with PVC up to the main bearing on the pedestal. The bearing housing is completely shielded with PVC to protect against corrosion of either the shaft or bearing. The PVC blower housing is polished and requires no paint or maintenance, the manufacturer states.

A back-curved impeller of PVC is said to resist corrosion as well as to prevent overload and remove fumes efficiently.

The plastic blowers are available in sizes from 143 c.f.m. to 7,722 c.f.m. Other capacities are available on special request.

For more data circle **22** on Reader Service Card

THE *One-coat*
HEAVY DUTY PROTECTIVE COATING

For Structural Steel • Tanks • Stacks
Walls and Floors • Tank Truck Exteriors

Outstanding resistance to chemicals, acids, alkalies and solvents . . . withstands extreme weathering . . . can be applied by brush or roller coating . . . dries to touch in six hours.

SERIES E-900 COATINGS are high solids modified epoxy formulations which result in superior toughness, resistance to abrasion and excellent adhesion to any clean surface.

Regularly available in . . . clear . . . white . . . gray . . . and sea-foam green. Because of high solid content, 95% of the applied thickness is converted to a protective film.

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Technical Bulletin E-900

7800-CC

THE CEILCOTE COMPANY INC.
4848 Ridge Road • Cleveland 9, Ohio

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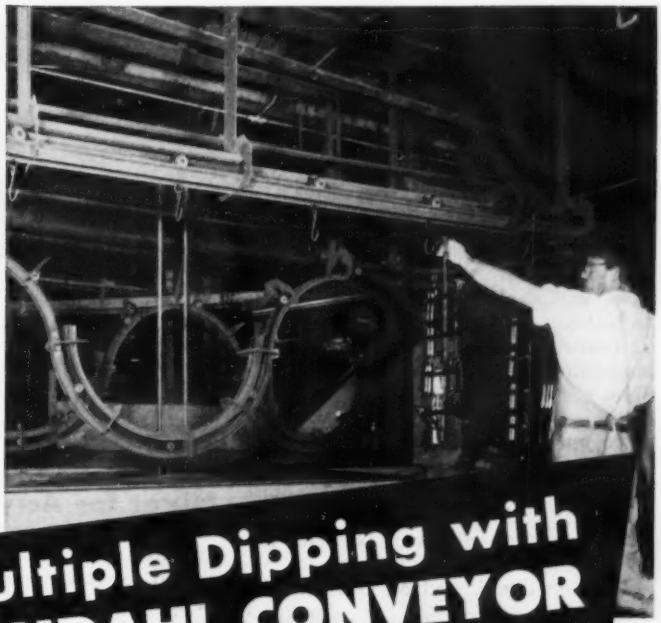
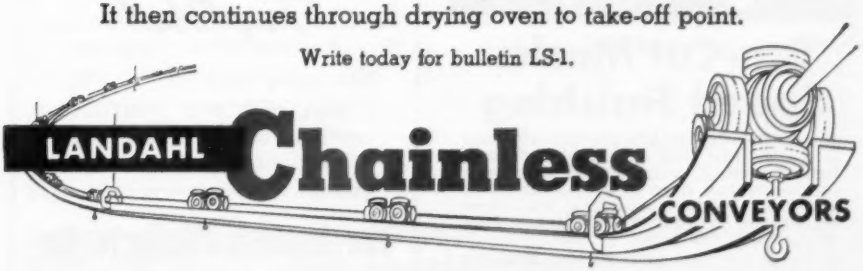
Saves floor space!



Multiple Dipping with LANDAHL CONVEYOR

Sharp dips and turns are features of this installation. The Landahl Chainless conveyor furnishes both horizontal and vertical turns on a minimum radius of 24 inches. The conveyor carries metal products through a cleaning operation consisting of a series of dip tanks only 6 feet long. It then continues through drying oven to take-off point.

Write today for bulletin LS-1.



The LANDAHL CONVEYOR CO., 13142 Athens Ave., Cleveland 7, Ohio

A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY

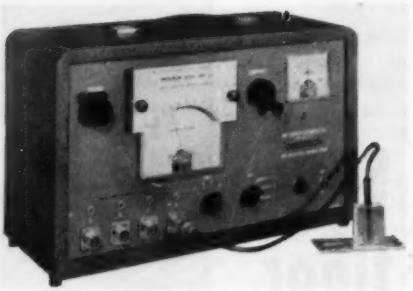
For more data circle **386** on Reader Service Card

Thickness Tester

A non-destructive coating thickness tester, Dermitron Model D-2, has been developed by Unit Process Assemblies, Inc. This portable instrument, designed for both laboratory and production use, gives fast, accurate, direct readings of virtually any coating on any base, including metal coatings (such as plating) on metal bases; non-metallic coatings (such as paint, anodizing, porcelain) on metal bases; and metal films on non-metallic bases (plastics, ceramics).

Dermitron D-2 is equipped with four measuring probes for measuring thin or thick deposits. It requires only a ⅛-inch circle-area for measurement. The Dermitron also can be used for sorting and matching of metals.

Data on the Dermitron D-2 is available from Unit Process Assemblies, Inc., 61 E. 4th St., New York, N. Y.



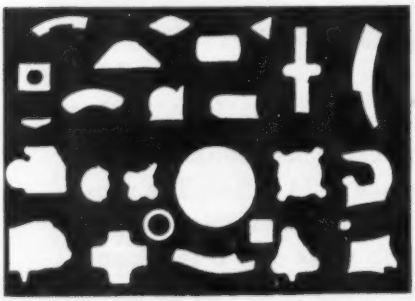
Non-Destructive Coating Thickness Tester

For more data circle 23 on Reader Service Card

★ ★ ★

Mixer for Acrylic Materials

An eight-cup paint mixer recently introduced by the DeVilbiss Co. is designed for mixing acrylic finishes used in multi-color touch-up operations. It



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

Write for free samples and Bulletin 160-C.

W. H. Brady Co.

746 W. Glendale Ave., Milwaukee 9, Wis.

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FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

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Cleveland, Ohio

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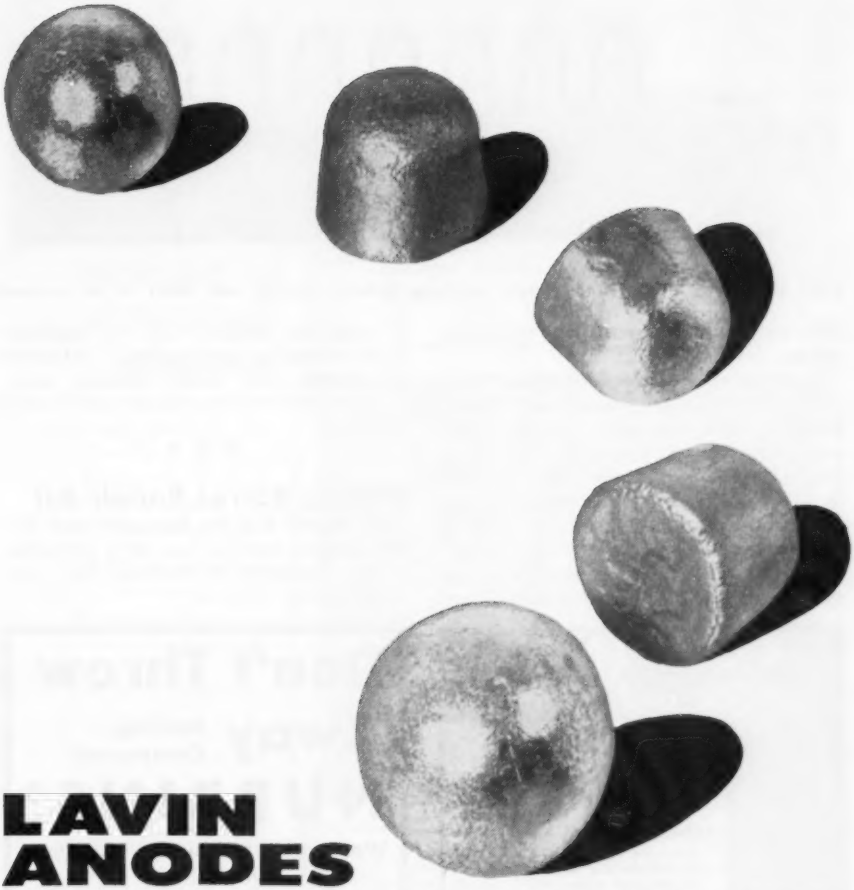

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***ENGINEERED FOR THE ELECTROPLATING INDUSTRY** are produced with or without lugs in* **KEYSTONE . . . RECTANGULAR . . . OVAL . . . BALL** *and* **SPECIAL** *shapes.* Available in COPPER . . CADMIUM . . NICKEL . . ZINC . . LEAD . . TIN for the electrodeposition process.

Lavin specializes in the manufacture of high purity anodes for all electrodeposition products. This minimizes the buildup of undesirable trace elements in the plating solution. These trace impurities can cause subtle, but definite, corrosion problems in the finished product.

Lavin's metallurgical staff is always ready to assist you in finding the solution of any routine or special electroplating problem. Our chemical and research laboratories are available to you at no cost or obligation. Technical information furnished upon request.

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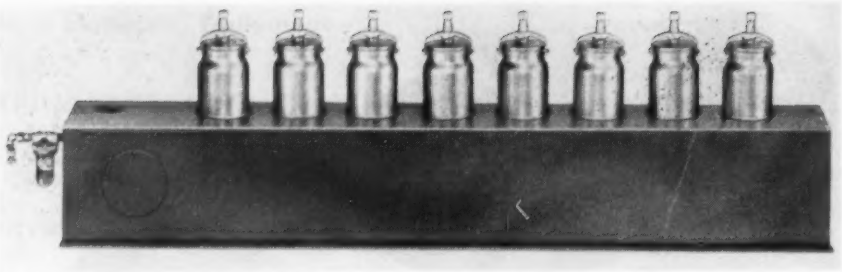

Eight Cup Paint Mixer: keeps acrylic touch-up finishes uniform and ready to be sprayed

aids in producing uniform, matching colors.

Developed by The DeVilbiss Company, Toledo, Ohio, the mixer incorporates eight one-quart suction feed cups with spray gun attachments. A single unit, it is equipped with a built-in air drive unit which constantly operates an agitator in each cup to keep the material properly mixed.

The unit is said to be simple to operate and clean. The cups lift out or fit into the pocket, with the agitator drive engaging automatically. Quickly detachable lids make refilling easy.

For more data circle **24** on Reader Service Card

★ ★ ★

Plating Barrel Repair Kit

A Repair Kit for Plexiglas and Lucite plating barrels has been introduced by Frederic B. Stevens, Inc., Detroit, Mich.

COATINGS
for Zinc and Cadmium

KER-CHRO-MITE® #4
Gives a mirror-like finish to dull-plated work; protects against corrosion, is stain resistant and outperforms other coatings.

KER-CHRO-MITE AL
Produces a yellow chromate conversion coating on pure aluminum or on high silica alloys. Excellent as a base for paint or as a final high resistance finish.

ZIN-K-LUX© (Zinc Brightener)
Produces a lustrous finish (barrel or still) and has excellent throwing power.

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Brightens (barrel or still), increases plating range and eliminates burning.

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ELECTRO-FINISHING RESEARCH, INC.

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Don't Throw Away *Buffing Compound* **NUBBINS!**

We remelt Nubbins — ship you whole bars.

Did you ever figure how many pounds are lost because your Nubbins are discarded?

Worthless Nubbins remelted and recast into uniform bars.

Work Done in Separate Plant.

Write, wire or phone Vinewood 3-5970

RECAST & REMELT DIVISION

McAleer MANUFACTURING CORP.
101 S. WATERMAN DETROIT 17, MICH.

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PROFIT BY ALL THE ECONOMIES INHERENT IN ULTRASONIC CLEANING

Branson's job-developed SONOGEN® *Ultrasonic-Cleaning Equipment assures you all these advantages:*

Cleaning-tank sizes from one pint to seventy-five gallons for batch and conveyorized cleaning.

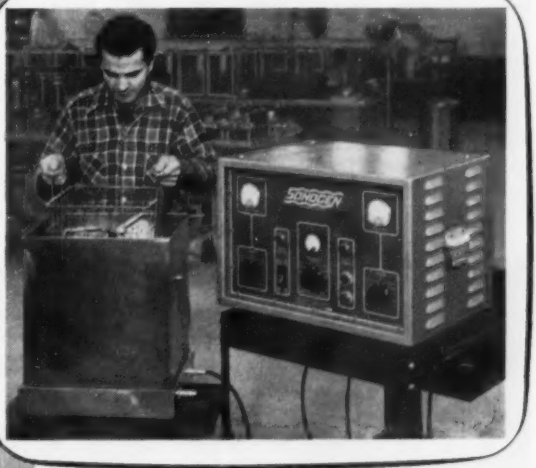
Maximum cleaning efficiency.

Rugged, simple construction for long trouble-free life.

Advanced design based on a decade of manufacture and use of ultrasonic equipment.

Modest investment, low operating and upkeep costs.

Ultrasonic energy has been used for years for rapid, thorough cleaning of sterling, plated and stainless flat and hollow ware, builders' hardware, castings, strip, electrical and electronic components, etc.



The Sonogen® Model APT-100B is used extensively for pickling and removal of rouge, tripoli and investment-casting materials, prior to plating.

BRANSON ULTRASONIC CORPORATION

26 BROWN HOUSE ROAD, STAMFORD, CONN.

Write or phone DAvis 4-6721 for a demonstration at your plant.

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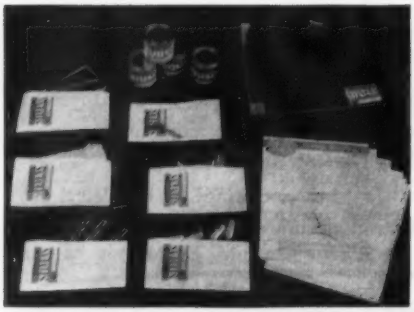


Contents of the Stevens Repair Kit for Plexiglas and Lucite plating barrels.

Using the kit, repairs are easy to make. The process used simulates welding, permitting an integral bond between the repaired area and the original barrel sections.

Detailed information on the kit and repair instructions are included in Stevens Technical Bulletin P-122, which may be obtained from Frederic B. Stevens, Inc., 1804 Eighteenth St., Detroit 16, Mich.

For more data circle **25** on Reader Service Card

★ ★ ★

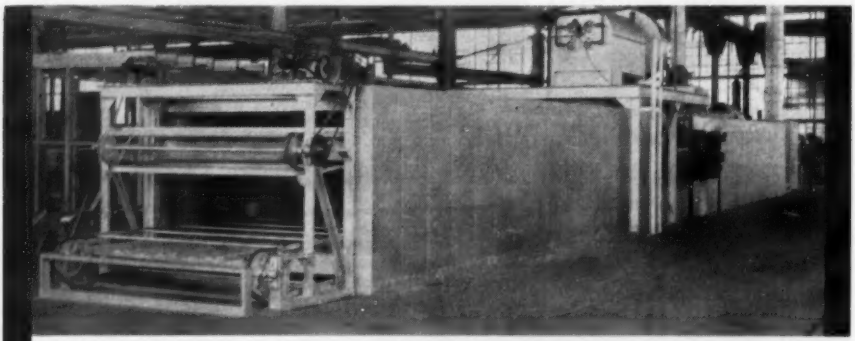
Automatic Rotary Spray Painter

The painting of round and deep-draw parts is facilitated with the introduction of an automatic rotary spray-painting machine by Conforming Matrix Corp., 356 Toledo Factories Bldg., Toledo, Ohio.

The flexibility of the machine makes it adaptable for decorating parts such as hub caps, toys, nameplates, and emblems. It will handle areas with diameters up to 15 inches.

Operation is simple. The part is put

To page 138→



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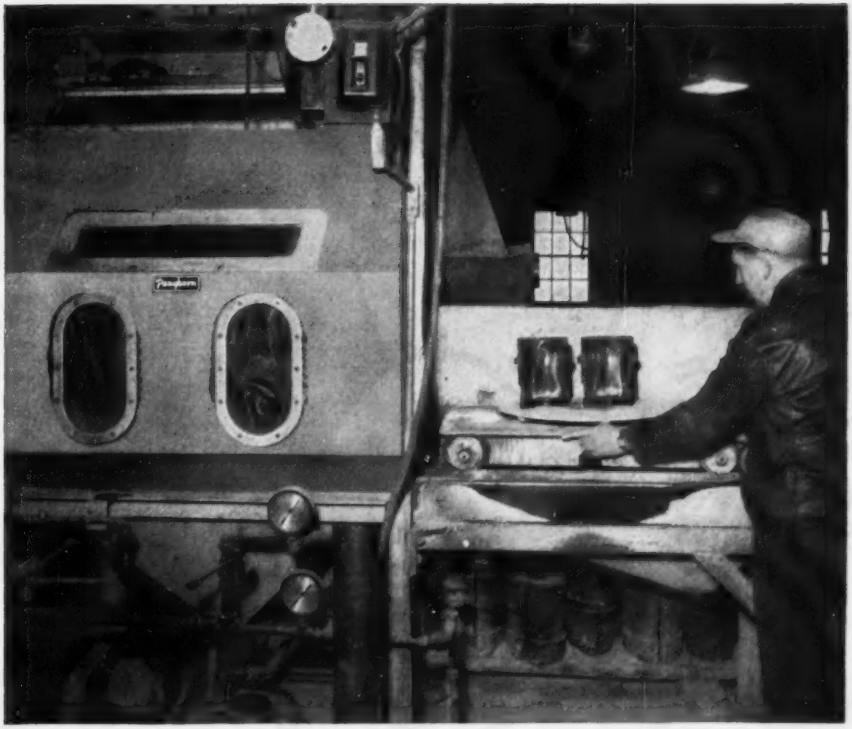

Pangborn Hydro-Finish cut cleaning time 50% in this plant

Paid for itself in only six months

Pangborn Hydro-Finish really paid off for this leading glass manufacturer. Cleaning quality increased mold life 10% to 15% and total cleaning and polishing time was cut in half! The resultant savings paid for the machine in 6 months and represented a substantial weekly sum thereafter.

Today, through new design and use of air jet sluriators, Pangborn Hydro-Finish costs less originally, costs less to maintain and gives you easier handling and added efficiency.

Write for Bulletin 1403 to PANGBORN CORP., 4900 Pangborn Blvd., Hagerstown, Md.

USE PANGBORN HYDRO-FINISH FOR:

Deburring • Surface finishing • Finishing threaded sections • Improving cutting tool life • Maintaining dies and molds • Removing grinding lines • Removing heat treat scale • Preparing surfaces

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BLAST CLEANS CHEAPER

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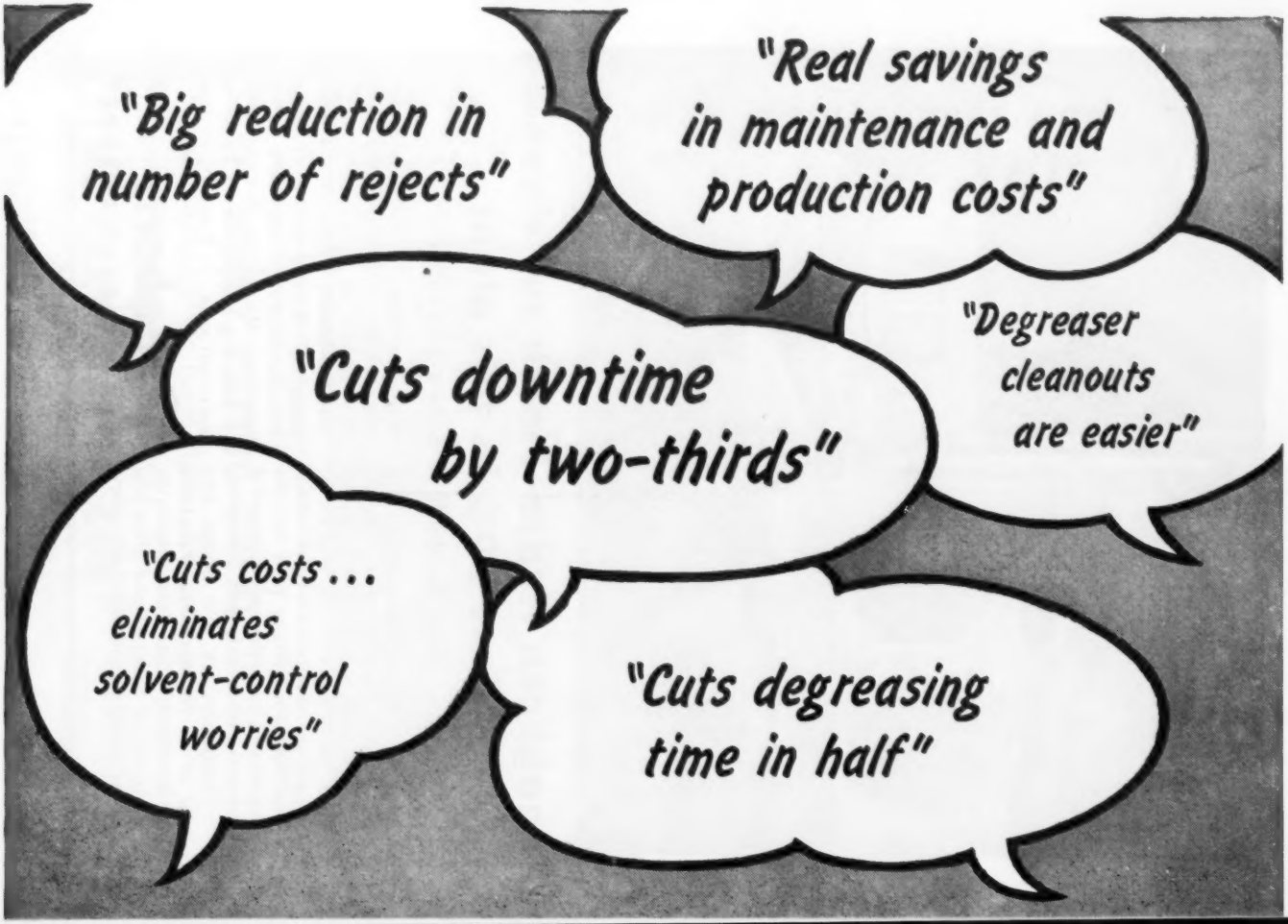

"Big reduction in number of rejects"
"Real savings in maintenance and production costs"
"Cuts downtime by two-thirds"
"Degreaser cleanouts are easier"
"Cuts costs... eliminates solvent-control worries"
"Cuts degreasing time in half"

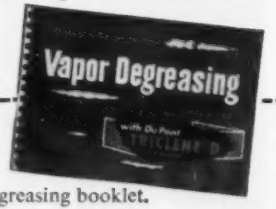
Here's why TRICLENE D is used for fast, thorough vapor degreasing

These statements represent the kind of degreasing results you can expect from "Triclene" D trichlorethylene. Manufacturers of products as different as automotive accessories, sporting goods, refrigerators, locks and builders' hardware—all users of "Triclene" D—made these comments.

They use it to clean grease and oil from all types of metals with every degree of surface polish. Users note that time between cleanouts is extended, and cleanouts are far easier. "Triclene" D maintains brighter cleaning—distillation after distillation—job after job.

Heat, light, air, acids and aluminum chloride will not affect "Triclene" D with its locked-in stabilizers. "Triclene" D trichlorethylene retains its original purity longer—contains nothing to harm even the most carefully machined surfaces. Yet it costs no more than other degreasing solvents!

Get all the facts on vapor degreasing. Du Pont's new book contains forty-two pages of data and illustrations on the latest metal-cleaning developments. Send for your copy—without obligation—today.



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...THROUGH CHEMISTRY

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Wilmington 98, Delaware

☐ Please send me a copy of your new vapor-degreasing booklet.
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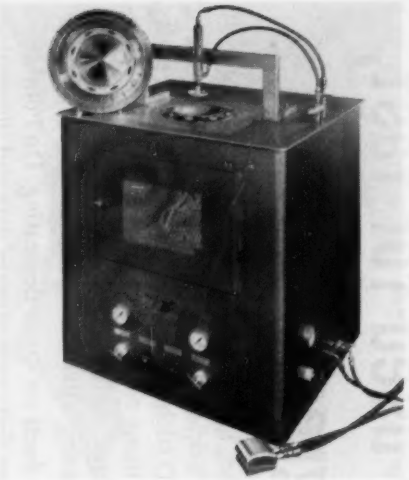
For more data circle **395** on Reader Service Card

into a mask and the foot pedal or hand valve depressed. The part is automatically clamped into the mask, to the desired pressure; the guns operate to a predetermined setting and the clamping cylinder retracts after the cycle is completed. The guns rotate beneath the mask, or they may be used in a fixed position.

Four dials on the front control the atomization of air to the gun, speed of gun rotation, length of spray time, and the machine air for automation.

The machine is totally enclosed. Air is drawn across and under the top of the machine and exhausted through a 12-inch-diameter outlet at the rear. Working parts cannot become contaminated. The exhaust requires 900 c.f.m. of free air, a ¼-h.p. motor and fan sufficing.



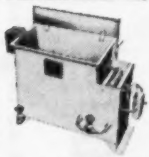
Automatic Rotary Spray Painting Machine

The floor space occupied is 32 by 35 inches. The table top is 36 inches

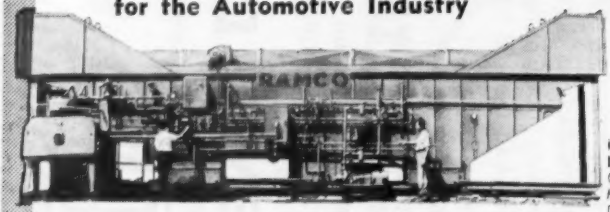
RAMCO degreasers

from Laboratory Units to Giants for the Automotive Industry

ANOTHER RAMCO PRODUCT



LABORATORY DEGREASER



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Courtesy Ford Motor Car Co., Detroit

Call on our engineering department for the latest in ULTRA-SONIC CLEANING.

Send for FREE CATALOG. Call your nearest Ramco engineer and have your metal cleaning equipment SERVICED AT NO CHARGE.

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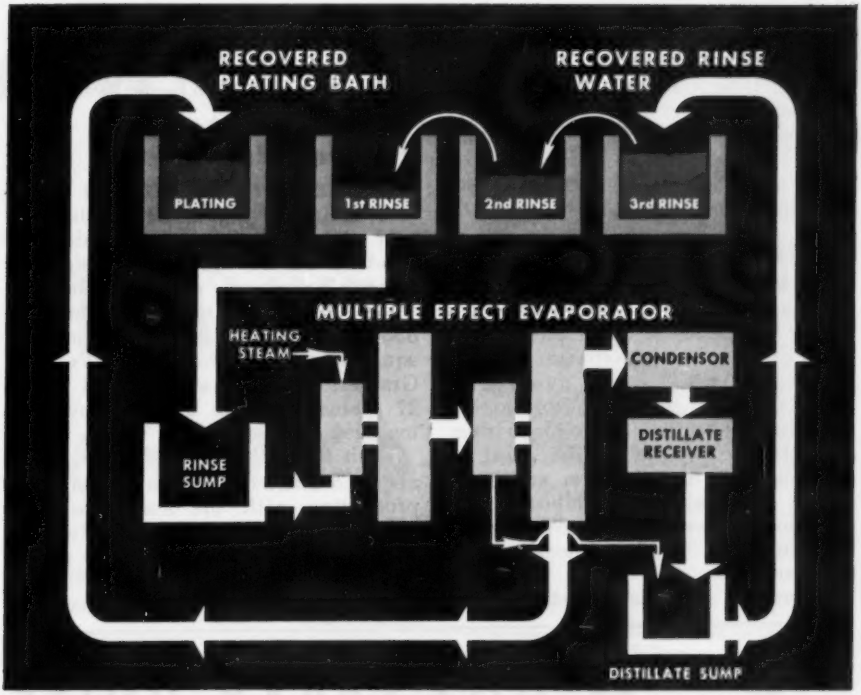


New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

Unbelievable? . . . No sir! . . . these are systems designed by a company with a 30-year reputation for building the best in plating equipment. Let us prove it—our staff will be glad to make an analysis of your process, recommend equipment and estimate costs and savings.

Send for complete data

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 OGDEN AVE., CHICAGO 50, ILL.

Please send me reprints of articles and literature on Industrial's Plating Waste Recovery Systems.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

For more data circle **397** on Reader Service Card

high. Installation requires only the attachment of an exhaust system, filtered compressed air and a pressure tank.

For more data circle **26** on Reader Service Card

★ ★ ★

Spray Booth Water Treatment

A liquid treatment for water-wash spray booths helps to protect equipment and reclaim overspray.

"Mogul M-55" keeps overspray paint particles separated, enveloping them in a protective film to make them float. It does not affect the paint in any way, the manufacturer states.

The material's rust-inhibiting formulation checks rust and scale formation in lines, headers, nozzles and strainers.

Literature and case histories are available from North American Mogul Products Co., Standard Building, Cleveland 14, Ohio.

For more data circle **27** on Reader Service Card

★ ★ ★

Register Mechanism for Graining Machines

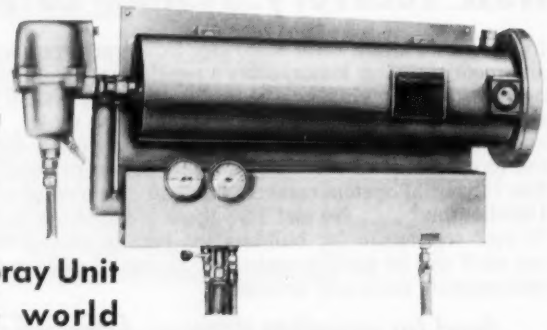
A timing or registering mechanism that makes possible mass production printing of any graining design at identical positions on every side of wood, plastic or metal cabinets or doors is now available as optional equipment on Hamant V-27 Vertical Grainers. It can also be added to V-27 grainers now in use, but must be installed at the factory.

With this optional equipment, cabinets and doors can be grained in mass production with the assurance that designs will match in assembly and will not be lost, as with random printing.

This device was previously installed

THERM -O- SPRAY
Trade Mark Reg. U.S. Pat. Off.

HOT SPRAY UNITS



—the leading Hot Spray Unit used all over the world

Reduce production costs—obtain better finishes!

THERMOSPRAY COMPANY, INC.
103 Park Avenue, New York 17, N. Y.
In Canada: Scandia Supply Co., Ltd., 376 Craig Street W., Montreal

For more data circle **398** on Reader Service Card

new, fast, ALKALINE *De Ruster* #2

Does not attack ferrous metals
Non toxic
Economical
No hydrogen embrittlement
No dimensional changes
Also removes paints, oils

Alkaline De Ruster No. 2 is the new Mitchell-Bradford non-electrolytic compound for removing rust quickly from ferrous metals. Since it concentrates its action on the rust itself, it produces no dimensional changes yet leaves the surface not only clean but without the tendency to re-rust.

Alkaline De Ruster No. 2 contains no dangerous acids, produces no harmful fumes. This eliminates the risk of hydrogen embrittlement and produces a surface ideal for subsequent finishing processes such as plating, phosphating, black oxidizing, etc. Alkaline De Ruster No. 2 is used in various concentrations in water of 180° to boiling. It is economical, safe to use, completely dependable. Write us about your rust removal problem!

Mitchell-Bradford

MITCHELL-BRADFORD CHEMICAL CO.
WAMPUS LANE MILFORD, CONNECTICUT

QUALITY PRODUCTS OF CHEMICAL RESEARCH

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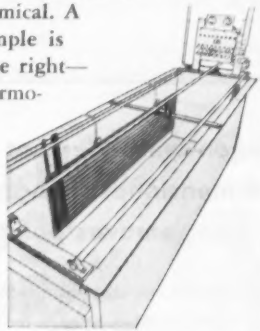
YOU WILL STOP USING PIPE COILS

as soon as you know the many advantages of the

DEAN® THERMO-PANEL COIL

which is NOT a coil at all. It TAKES THE PLACE of old-style pipe coils and does a much better job in every way. Costs less. Takes less space. Weighs less. More easily installed. More easily removed for cleaning. More efficient. More economical. A typical example is shown at the right—a Dean Thermo-Panel Coil in an open rectangular tank.



PRODUCTS FINISHING EXECUTIVES

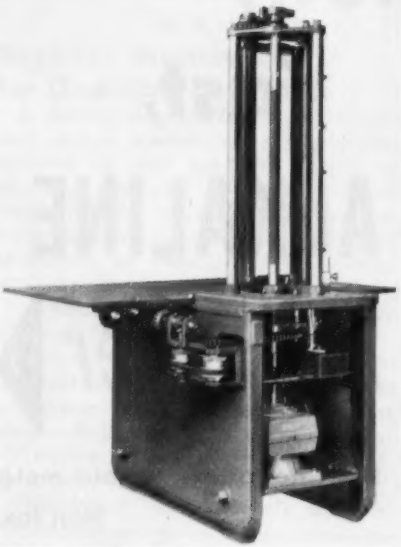
who deal with heat transfer problems should have complete data on this money-saving Dean product. Check the bulletin you want—below. Both if you wish. Clip out and send to us with your name, firm name, and address.

☐ *Bulletin 355. 52 pages. Technical Data.*

☐ *Bulletin 257. Price and Design Data.*

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave.
BROOKLYN 38, N. Y. Tel STerling 9-5400

For more data circle **400** on Reader Service Card



Register Mechanism for Graining Machines

only on Hamant horizontal grainers.

Complete details are available from Hamant Tool Co., Inc., 3917 E. Second St., Dayton 2, Ohio.

For more data circle **28** on Reader Service Card

★ ★ ★

Traveling Buffing Head

A Traveling Head for buffing, known as Model 50-108, has been introduced by Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

This head travels with the work, providing more buffing time on areas that are difficult to reach. It can be used on straight-line conveyors and on certain continuous rotary automatics.

As the work approaches the wheel, an air cylinder is energized for forward stroking, variable up to five inches. At the end of the stroke, the

... CUT CLEANING COSTS WITH TECT'S

Model 22 Solvent Vapor Degreaser

For safety engineered cleaning TECT's compact Solvent Vapor Degreaser offers low initial installation cost and economical operation.

This versatile unit cleans approximately 250 lbs. of metal per hour in pure solvent vapor.

VITAL STATISTICS	
Outside Diameter:	32.5 in.
Height:	37.5 in.
Outside Diameter of Tank:	23.5 in.
Work Clearance:	21 in.
Basket Diameter:	18 in.
Solvent Capacity:	13 in.

Larger sizes available

SAFETY

Minneapolis-Honeywell Safety Thermostat shuts off electricity if solvent vapors rise above the condenser, due to failure of water supply or inadequate volume of water.

Chromalox Thermostat for heating elements shuts off electricity when machine requires draining of sludge or if more solvent is needed.

Only **$259.00**
f. o. b. Dumont, N. J.
(Subject to change without notice)

ANOTHER PRODUCT OF TECT, INC. DUMONT, N. J.

AMERICA'S MOST COMPLETE LINE OF SAFETY SOLVENTS

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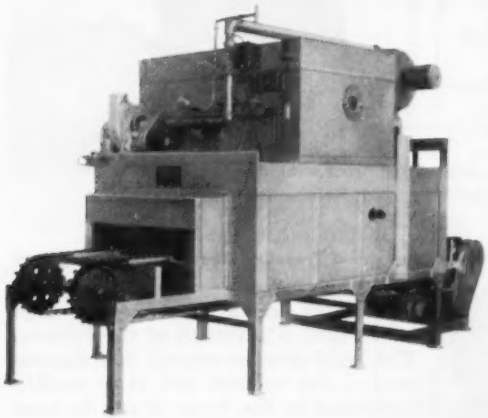
You're SURE of UNIFORM Drying—FAST



in

ROCKWELL

Recirculating

OVENS

Uniform distribution of controlled, high velocity, recirculated, heated air assures faster drying or baking at precise temperature.

Investigate the oven with the built-in heating "know-how." Write for Catalog.

Made in wide range of standard electric-, gas-, oil- or steam-heated, cabinet, rack or truck types and in special batch or conveyor types.

W. S. ROCKWELL COMPANY
2907 Eliot Street Fairfield, Connecticut

For more data circle 402 on Reader Service Card

Simultaneous Action...

CLEANS . . .

RUSTPROOFS . . .

PHOSPHATES . . .

METACOTE is the NEW and OUTSTANDING process for anchoring paint to metal surfaces. It PHOSPHATES as it RUSTPROOFS as it CLEANS. Spray or dip . . . no special equipment needed.

METACOTE prevents paint failures on practically all metals and metal alloys. Formulated by metal engineers, METACOTE'S merits are being "proved" daily in some of the country's largest industrial plants.

Write for Folder

Metasurf
CHEMICAL PRODUCTS FOR TREATING METAL SURFACES
CORPORATION
12830 EATON
DETROIT 27, MICHIGAN
BRoadway 3-3880

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air cylinder returns the head to pick up the next piece of work. The speed of travel can be synchronized with the conveyor speed through a hydro-check cylinder, which is also used to provide smooth forward movement.

A dovetail way provides horizontal adjustment and a handwheel is used for vertical adjustment of the column. The head can be rotated 360 degrees around the column and it is readily positioned to the work. It can be used with buffs, set-up wheels, abrasive belts, and wire or tampico brushes. V-belt drive for three-, five-, and seven and-one-half-h.p. motors can be supplied for any popular spindle speed.

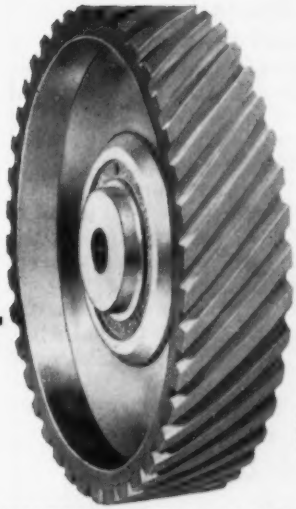
Hammond Traveling Head: more buffing time

For more data circle **29** on Reader Service Card

A BETTER BACK-UP WHEEL

R57

FOR YOUR ABRASIVE BELTS



45° Standard For Stock Removal

AVAILABLE NOW IN POPULAR 14" DIAMETER SIZES AT BIG SAVINGS

You can get the new R57 RUBBER CONTACT WHEELS at lower prices in 14" Diameter sizes*** due to newly developed production techniques. These new wheels have all the well-known features of the R50 and R54 models—LONGER BELT LIFE . . . OIL RESISTANT RUBBER . . . WET OR DRY OPERATION . . . HEAT DISSIPATION . . . MAXIMUM SAFETY . . . other features. And what's more these wheels have a 30% trade-in value.

***The new R57 and the R50 and R54 contact wheels are available in many popular sizes . . . ½" to 22" DIAMETERS in WIDTHS from 1" to 6". Other wheels made to your specifications.

14"

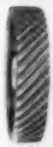
TYPE	WIDTH OF FACE 1"	2"	3"	4"
PLAIN	32.00	34.00	36.00	38.00
SERRATED	37.00	39.00	42.00	44.00

AVAILABLE IN PLAIN OR SERRATED FACE IN ALL DUROMETERS

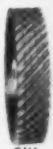
Write for Details

DElta 6-8900

A WHEEL FOR EVERY OPERATION



45° Scoop Tooth — Aggressive Stock Removal



Slit Serration — Aggressive Contact Work

Cosmo Expander — Backstand Idler Not Needed

"X" Serration — Moderate Contour Work

Specializing in Contact Wheels and Industrial and Printers Rolls

CHICAGO RUBBER COMPANY, INC.

651 MARKET STREET • WAUKEGAN, ILLINOIS

For more data circle **404** on Reader Sevice Card

Buffing Printed Circuit Surfaces

Maplewood Companies, P. O. Box 113, Livingston, N. J., has announced a method of buffing the surfaces of printed circuits, which is said to leave the sheets dry, clean and uniform. The sheets are run continuously, doing either one side only, or both sides simultaneously, at the direction of the operator, at a production rate exceeding 60 square feet per minute. No tooling is required, whether the sheet size is 12 by 12 inches or 36 by 36 inches. Maplewood will process samples upon request.

For more data circle 30 on Reader Service Card

★ ★ ★

Conveyor Drive Mechanism

A recently introduced caterpillar drive for cable conveyors allows larger-radius traction wheel turns to be used; thus bulky objects can be handled on close hook centers.

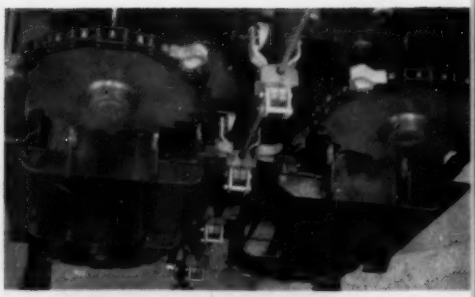


Fig. 1—Buschman Cable Conveyor Caterpillar Drive applies power to a straight section of the Bush-Lock Cable conveyor.

A product of the E. W. Buschman Co., Clifton and Spring Grove Aves., Cincinnati, Ohio, this drive mechanism applies power on a straight section of the conveyor.

The Buschman caterpillar drive has two strands of chain with special dogs

Anode Bags
Baffle Bags
Basket Saver Bags
OF EXCEPTIONAL PURITY AND UTILITY

- ALLIED bags are standard throughout the country, yet are lowest in price.
- Material especially known for strength treated for removal of starches, plastisizers, and leaf.
- Anode bags of cotton nylon, vinyon, orlon, dynel and polyethylene

ALLIED INDUSTRIES CO.
18400 MT. ELLIOTT AVE.
DETROIT 34, MICHIGAN
We make more anode bags than all other makers combined

For more data circle 405 on Reader Service Card

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

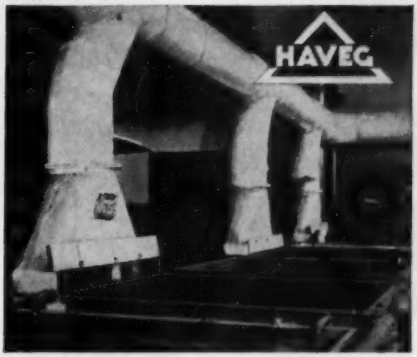
Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle 406 on Reader Service Card

Wherever CORROSION RESISTANCE is a Factor



HAVEG PLASTICS
Eliminate Plating Room CORROSION

Polyester Glass Fume Duct and Scrubbing System Replaces Black Iron Installation at Thompson Products

Nitric and nitric hydrofluoric acids are used at Thompson Products' Coit Road Plant in Cleveland, for pickling and plating a variety of automotive and aviation valves and other parts. Installation of light weight Haveg polyester glass fume hoods and duct from plating tanks to fume scrubber chamber solved costly corrosion problems. Because sections of Haveg polyester glass duct may be homogeneously joined at the time of installation, fume leakage at duct joints and in the scrubber were no longer a problem. Corrosion of machine tools and other parts in the plating room was completely eliminated and repair and replacement costs were cut to a minimum.

In addition, Haveg polyvinyl chloride lined steel plating and acid tanks, and scrubber-to-fan lines have shown superior corrosion resistance advantages at the plant.

No other material offers as wide a range of effective resistance to corrosive acids, hypochlorites, salts, alkalies, and solvents as the Haveg plastics. Let a qualified Haveg corrosion engineer help you determine the type best suited for your needs . . . or write for Haveg Bulletins. H-703-R

SPECIFY HAVEG PLASTICS FOR:—PIPING • PUMPS • PROCESS TANKS • FUME DUCTS • VALVES • HEAT EXCHANGERS

HAVEG INDUSTRIES, INC.
914 GREENBANK ROAD
WILMINGTON 8, DELAWARE

For more data circle **407** on Reader Service Card

"unmistakably the finest"

STUTZ
Belt-Driven Plating Barrel

★ Lower Initial Cost
★ Lowest Possible Maintenance
★ No Cylinder Gears
★ No Cylinder Bearings

Greater Current Carrying Capacity Which Lowers Plating Time and Cost

Write for Catalog and Prices

THE STUTZ COMPANY
4410 CARROLL AVENUE
CHICAGO 24, ILLINOIS

For more data circle **408** on Reader Service Card

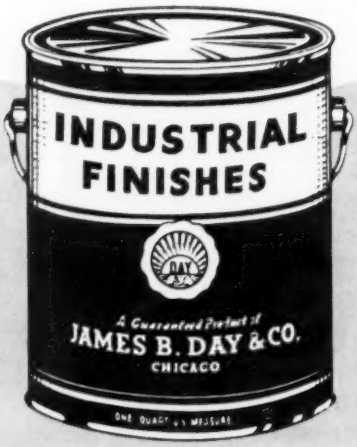
PERFORMANCE TESTED!

for Enduring Beauty

Dayco industrial finishes

For more than half a century, we have been serving the leaders in a wide variety of industrial fields, with the fine finishes that save time and money on production and add the attractive appearance that sells. We have or will produce for you, the special finishes economical production and enduring beauty calls for. We are specialists in:

- Clear and colored Lacquers
- Primers
- Surfacers
- Baking Enamels
- Screening Materials (Lacquers-vinyls-synthetics)
- Handle Finishes
- Removers
- Undercoaters
- Stains



FINE FINISHES SINCE 1906

Write us about your needs

JAMES B. DAY & COMPANY

1872 Clybourn Avenue • Chicago 14, Illinois

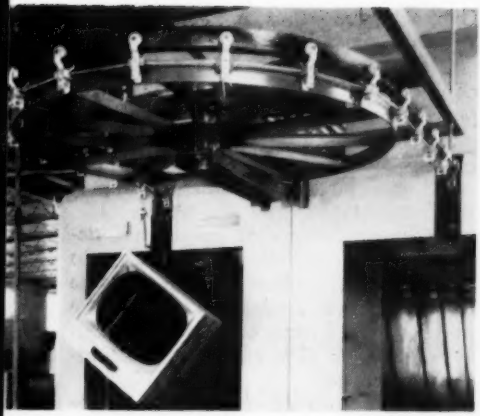


Fig. 2—Bush-Lock Cable Conveyor five-foot diameter traction wheel 180-degree turn carries large metal television cabinets through cleaning and finishing processes.

that engage the cable and trolley with equal pressure from both sides. Side thrust is carried by both chains, so that power is transmitted smoothly during engagement. There is no tendency for the trolley to cling to drive dogs on disengagement when using the double caterpillar drive.

Traction wheels of large radii guide the cable around idler corners and permit clearance of large packages.

For more data circle **31** on Reader Service Card

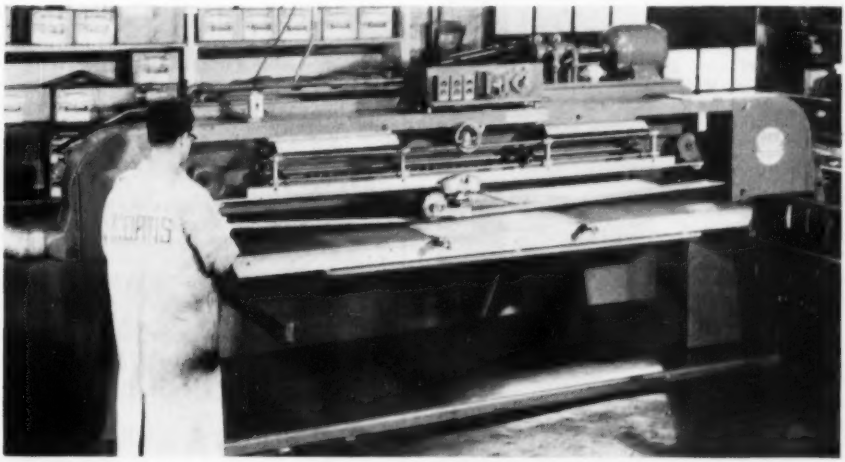
★ ★ ★

Hydraulic Automatic Stroke Polisher

Curtis Machine Division of the Carborundum Co., Jamestown, N. Y., has introduced a hydraulic automatic polishing machine, designed for polishing 2B stainless steel mill sheets or formed flat surfaces to the equivalent of a No. 4 finish or better.

Model 43-R3 employs an hydraulic system which powers a traveling head at 80 to 90 eight-foot strokes per minute. Longer strokes are possible. A buff roll mounted on the traveling head backs the six-inch-wide abrasive belt with a soft pressure that helps to produce a uniform finish. The stock table reciprocates under the belt with grind pressure, either by manual or air pressure control.

The scratch pattern created is longer than mill-furnished standard No. 3 or No. 4 finishes. It approximates the final finish attained by fabricators.



Curtis Model 43-R3 Hydraulic Automatic Stroke Polishing Machine: for stainless steel sheets

←——For more data on advertisement on opposite page, circle **409** on Reader Service Card

The Curtis hydraulic automatic finish is easier to simulate by hand, as it is close to the final finish.

Curtis Model 43-R3 can be built to accommodate any length or width. The machine also can be used for weld removal, surface cleaning prior to painting, scale removal, filler sanding and other operations.

For more data circle **32** on Reader Service Card

★ ★ ★

Removing Chromium from Copper Baths

A process for removing chromium from copper plating baths has been announced by MacDermid Inc., Waterbury, Connecticut. Known as the MacDermid Chrome Removal Process, it is available for use with the firm's Rocheltex Copper, Standard Bright Copper, and the high-speed Z/T Bright Copper baths.

The process involves treating the copper plating solution with two prepared materials, Metex Precipitator and Metex Reducer, then carbon treating and filtering. It results in the complete removal of chromium contamination, it is stated.

The additive chemicals do not accumulate in sufficient quantities to form bi-valent copper or create side effects. If recontamination occurs, the process may be repeated without concern for such side effects, the manufacturer states.

The presence of chrome in copper baths is generally caused by contamination from solution carry-over on racks; rack tips covered with chrome plate discharging when periodic reverse current is used in plating operation; mist from chrome tanks where ventilation is inadequate; and accidental spillage of chromium-bearing solutions into the copper bath.

Engineered for Extra Years of Trouble-Free Operation

WALKER
Selenium Rectifiers

You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.

These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.

You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write

The Walker Division

THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

For more data circle **410** on Reader Service Card

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

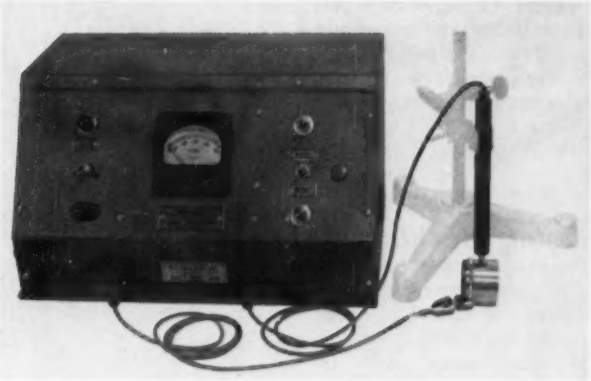
ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

J. HOLLAND & SONS, INC.
485 KEAP ST., B'KLYN, N. Y., STagg 2-2022

For more data circle **411** on Reader Service Card

Another EXCLUSIVE ROHCO® Development . . .



THE NEW ROHCO ANODICATOR

automatically checks thickness of Anodic Coatings on Aluminum

The dielectric test is a simple and reproducible spotcheck on production to obtain anodic coatings conforming to customer specifications.

Completely automatic, the new, approved ROHCO ANODICATOR provides a reliable method of testing anodized aluminum and its alloys as specified in ASTM B110-45. Essential for every anodizing plant. It incorporates two important factors in the measurement of dielectric strength (1) a uniform, slow rate of voltage increase and (2) uniform pressure of the probe on the anodic surface. Features a motor driven voltage elevator; automatically indicates the minimum voltage upon breakthrough when a light appears; automatically resets to zero voltage.

The ANODICATOR quickly pays for itself by speeding output, eliminating subsequent manufacturing costs of off-standard anodized materials and parts, and reducing rejects.

Find out how the ROHCO ANODICATOR can be an important contribution to your cost-cutting program. SEND FOR FREE INFORMATION, TODAY!

R. O. HULL & COMPANY, INC., 1304 Parsons Ct., Rocky River 16, Ohio

ROHCO

R. O. HULL & COMPANY, INC.
1304 Parson Court
Rocky River 16, Ohio

Please send descriptive data and price on ROHCO ANODICATOR!

Name ..... Title .....

Company .....

Street Address .....

City ..... Zone ..... State .....

For more data circle 412 on Reader Service Card

The MacDermid Chrome Removal Process is formulated to eliminate plate roughness, etches and stains, blistering and skip-plate evident where chrome contamination is found in copper plating baths.

For more data circle **33** on Reader Service Card

★ ★ ★

Parts-Cleaning Machine

Circo Equipment Company has introduced a small motor-operated metal cleaning machine for cleaning metal parts. The machine, listed by Circo as Model MPC-5, cleans parts by using powered agitation in the cleaning solution.

The MPC-5 is available for cold operation or it may be used with steam and electric heat.

Complete specifications are available from Circo Equipment Co., 51 Terminal Ave., Clark, N. J.

Circo's Motor-Operated Cleaning Machine

For more data circle **34** on Reader Service Card

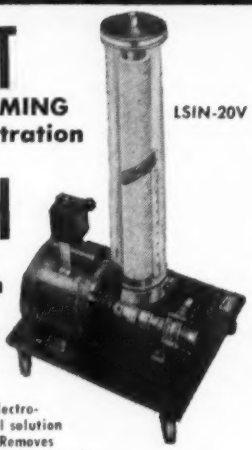
★ ★ ★

Go to School in Your Living Room. Booklet by Homer Kempfer, executive director of the National Home Study Council, tells how people are using home study courses to improve themselves by further education. Discusses advantages of home study program, emphasizes the value of these courses for advanced study. Cost, 25 cents. Write **Success Unlimited,** 5316 N. Sheridan Rd., Chicago 40, Ill.

Sethco Filters Fast

FROM
START
SELF PRIMING
instant filtration
TO
FINISH
Automatic Backwash Reversal Switch

LSIN-20V



Models equipped with corrosive resistant alloys and materials for every electroplating and industrial solution from pH 0 to pH 14. Removes particles down to one micron in size.

Sethco Mfg. Co.
70-72 Willoughby St., Brooklyn 1, N. Y. · UL 5-8940

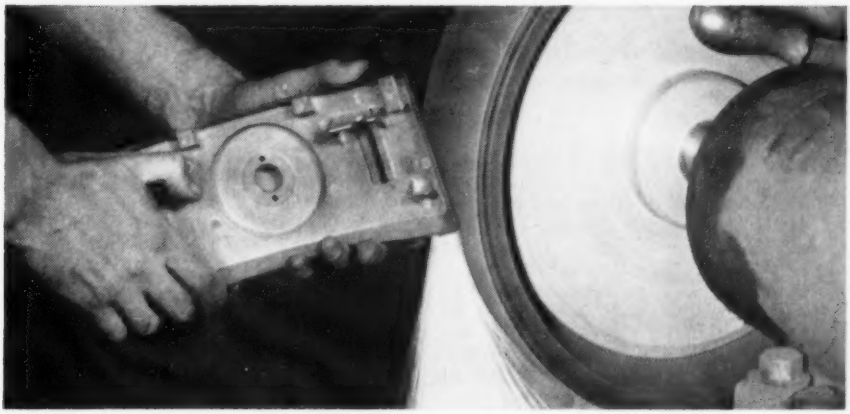
For more data circle **413** on Reader Service Card

"INCREASE IN WAGES"

"The lessons have helped me considerably in my work; I have received an increase in wages since I started taking your course," writes plating foreman L. N. Riggs of Sabina, Ohio. Experience has shown that those men who take ELECTROPLATING KNOW HOW, the unique home study course, better themselves. Why not investigate? Write **today!** JOSEPH B. KUSHNER, ELECTROPLATING SCHOOL, 115 BROAD ST., STROUDSBURG 12F, PA.

For more data circle **414** on Reader Service Card

Increase Pieces-Per-Belt *30% OR MORE* with MICHIGAN ABRASIVE BELTS



FACTS FROM TYPICAL MICHIGAN ON-THE-JOB FILE:

OPERATION: Backstand grinding-finishing die cast auto-trim parts.

FORMER BELT: Resin bond, 180 grit - 150 pieces per belt.

MICHIGAN BELT: **RED COAT** Resin bond, 180 grit - 250 pieces per belt.

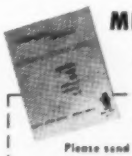
66⅔% more pieces and nothing was changed but the belt!

Yes, it may be hard to believe but, it's true! And, as you know, nothing puts more value into sales dollars than a major cut in manufacturing costs! More and more people who *thought* they were getting peak production per belt are being amazed at the *additional* production they get from Michigan Abrasive **RED COAT** Resin belts, discs and sheets.

If you *think* you are getting maximum production and life from your present coated abrasives, you owe it to yourself, for the sake of profits, to test Michigan **RED COAT** Brand products in your operation. Only then will you *know* if your grinding and finishing costs are at rock bottom.

Michigan Abrasive is the fastest growing manufacturer of coated abrasives in the country . . . and no wonder! The proof is in *performance*. See for yourself what **RED COAT**, the sharper cutting, cleaner cutting, smoother finishing brand of coated abrasives, can do for you. Call your Michigan representative today or mail coupon for free, complete catalog and representative will call you for appointment. Do it soon. You'll be glad you did!

Michigan®
ABRASIVES



MICHIGAN ABRASIVE CO.

Manufacturers of "The Humidity-Controlled Abrasive"
11911 E. 8-MILE ROAD • DETROIT 5, MICHIGAN

I want to know more about Michigan Abrasives

Please send free Catalog ☐ Have representative call ☐

Name_____

Title _____

Firm_____

Address_____

City_____ Zone_____ State_____

RED COAT BRAND

For more data circle 415 on Reader Service Card

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . societies

NEW PLANTS

Maplewood Companies has expanded its engineering facilities, and has moved to larger quarters, in Livingston, New Jersey. Headed by D. J. Wahler, well-known mechanical metal-finishing consultant, Maplewood Companies acts as direct factory representative in the eastern, middle Atlantic, and southeastern sections of the U. S. for the **Packer Machine Company.**

★ ★ ★

Burke B. Roche, president of **Binks Manufacturing Company** has recently announced the opening of the company's new Atlanta, Georgia, branch office, warehouse and service center. The new building provides 6,000 square feet of floor space.

Located in a new building at 196 14th St., Northwest, this is the latest addition to the chain of Binks sales offices and parts inventory and repair facilities.

Cowles Chemical Company, Cleveland, Ohio, has recently purchased 20 acres of land for a new plant in Monroe, Michigan, according to R. F. Huntley, president. The company has no definite plans for starting construction, but hopes to make an announcement concerning a new plant sometime later this year.

Mr. Huntley also announced the acquisition of an additional 82 acres at Skaneateles Falls, New York, for the continued expansion of Cowles' plant at that location.

★ ★ ★

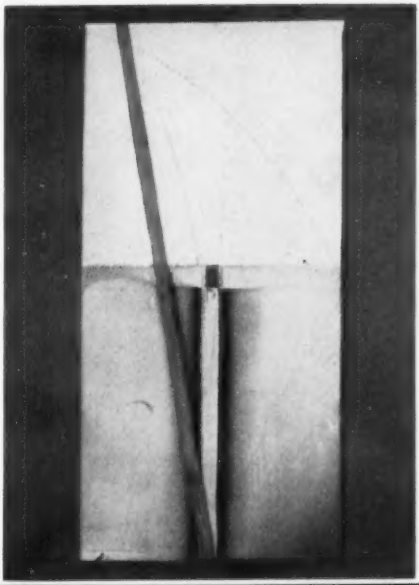
American Smelting and Refining Company has expanded its central non-ferrous metal Research Laboratories at South Plainfield, N. J., by one-third.

The new laboratories will be devoted to asbestos application and process research for ASARCO's subsidiary, Lake Asbestos of Quebec Limited; to the production and study of high purity metals; and to research on refrac-

New Binks factory branch office in Atlanta, Georgia, serves the southeastern territory

QUALITY FINISHES

FOR THE PLATING INDUSTRY



QUALITY THAT SPEAKS FOR ITSELF—The upper half of the above silver plate was finished with Nikolas 2105 Clear Lacquer; the lower half with competitive recommended clear silver lacquer. A rubber band was placed over the two finishes and in two weeks the free sulphur had penetrated the competitive material with the above results.

The same results can be expected when testing No. 2105 Clear Lacquer for Hardness, Mar-resistance and Discoloration from direct sunlight.

The finest plated goods are protected by Nikolas Clear Finishes.

Eye Appeal Sells Your Product!

Sixty-Seven Years of manufacturing know how available for any of your finishing problems.

NIKOLAS

G. J. Nikolas & Co., Inc.

2880 Washington Blvd., Bellwood, Ill.
33 Grand St., Brooklyn, N. Y.

For more data circle **416** on Reader Service Card

tory metals such as the rare earths and other high-temperature metals.

A new wing will be added to the present laboratory. Construction will begin immediately, and full operation is expected by the end of the year.

★ ★ ★

Larry Goad & Company has recently completed a new plant and office in St. Louis, Missouri. This fabricating and tank lining shop is equipped with two Cleveland Tramrail Bridge Cranes for handling, loading and unloading of heavy equipment.

This company is equipped to install plasticized polyvinyl chloride tank linings and to weld and fabricate rigid polyvinyl chloride tanks, hoods, and exhaust ducts. The company also specializes in lead contracting jobs of any size or description, such as lead coils, homogeneous lead bonding, anodizing tanks and coils, cooling and heating coils, and anodes.

The new facilities are at 9292 Watson Industrial Park, St. Louis 19, Mo.

It's New!

ALL PURPOSE ELECTROPOLISHING SOLUTION

ELECTRO-GLEAM 55

Same bath used for electropolishing high and low carbon steel, 300 and 400 series stainless and most aluminum.

- NON TOXIC
- NON EXPLOSIVE
- READY MIXED
- INDEFINITE LIFE
- CONTROLLED METAL REMOVAL

Distribution Areas Open

ELECTRO-GLEAM, INC.

445 N. Division St., Buffalo 4, N. Y.

Reg. U.S. Patent

For more data circle **417** on Reader Service Card

Branson opens new plant in Stamford, Conn.

Branson Instruments, Inc., and its subsidiary, **Branson Ultrasonic Corporation**, have recently moved into a new plant at 37 Brown House Road, Stamford, Conn. This gives the company about 24,000 square feet of working floor space, more than twice that available in the old plants.

Branson is best known for its ultrasonic testing instruments and a complete line of ultrasonic devices.

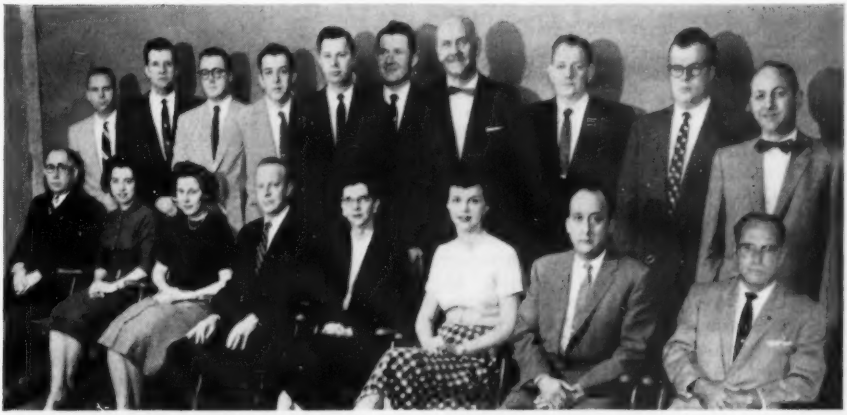
COMPANIES

Eleven salesmen from **Wyandotte Chemicals'** Ford Division Industrial, Railroad, and Aircraft Department recently attended a week-long training school at the company's' Wyandotte, Michigan, Research and Technical Service Laboratories. Ford Division Los Nietos plant research representatives, a technical service representative from the company's California production unit and a staff member of the home office Export Department also attended.

The salesmen attending the training school headquarter in 7 Ford Division district offices. They service users of metal cleaning, paint removing, corrosion preventing and floor absorbing products in the automotive, aircraft, electroplating, petroleum, truck and bus industries.

★ ★ ★

Wyandotte Chemicals J. B. Ford Division Technical Service Department has recently expanded. Additional laboratory space has been assigned to the department both in Wyandotte, Michigan, and Los Nietos,



Members of Wyandotte Chemicals' J. B. Ford Division Technical Service Department (left to right), back row: Charles A. Wyatt, Leo J. Hawk, Thomas A. Gilman, Howard L. Anderson, Victor P. Boka, Richard H. Andrew, Armin A. Roth, Eugene G. Nutting, William F. Hawk, Gail A. Smith; front row: Lee H. Minor, Rosalie Giaimo, Vera C. Heins, D. E. Anderson, Beatrice M. Rike, Beverly J. Compeau, R. J. Mooney and F. A. Vassar.

California. Additional personnel have been added to give expanded field and laboratory service.

★ ★ ★

"More and better service for customers," was the theme of the **Pennsalt Chemicals** Metal Processing Products recent sales meeting at Seaview Country Club in Absecon, N. J. Fifty members of the company's field sales staff, assembled for the three-day conclave, got a complete review of modern service methods as they

Field sales staff, Pennsalt Chemicals: meeting reviews service methods for company products

apply to Pennsalt metal processing products.

Sales Manager John M. Davidson, assisted by Chemical Specialties Director of Sales J. Stanley Hall and Product Manager Horace F. McIntyre, directed a series of panel discussions and sales clinics revolving around the company's line of metal cleaners, phosphate coatings, and cold working lubricants for the metal fabricating and finishing industries. Speakers included William M. Lee, manager of Sales Service at the company's Whitemarsh Research and Development laboratories, and Jack C. Lum, manager of New Products, who conducted a case history session describing new products in action. Of special interest was the new detergent iron phosphate Fosbond 25 which, he said, has found unusually rapid acceptance.

Pennsalt President William P. Drake addressed the men on the company's current expansion program and its recent acquisition of Delco Chemicals Company. Albert H. Clem, general manager of Pennsalt's Chemical Specialties Division, discussed the future expansion plans of the division together with pertinent facts concerning the Delco organic and inorganic products. These complement the Pennsalt Metal Processing line in both new and related fields. One of Delco's recent products for the metal processing industries is a vinyl strippable coating for the protection of aluminum sheets.

★ ★ ★

Cowles Chemical Company, Cleveland, has granted licenses to Nightingale Supply Company, Ltd., and its subsidiary, Nightingale Silicates Pty., Ltd., of Sydney, N.S.W. Australia, covering its furnace and processes for the manufacture of Drymet, anhydrous sodium metasilicate and other detergent silicates, according to R. F. Huntley, Cowles' president.

Mr. Huntley pointed out that the license also includes processes, formulas and the use of Cowles' trade names covering laundry, food sanitation and metal finishing chemicals.

★ ★ ★

Frederic B. Stevens, Inc., Detroit metal finishing equipment and supply firm, has announced a new merchandising service for customers. Plating and anodizing firms using Stevens plating and processing equipment will be furnished, without cost, promotion folders for mailing to their customers.

The folders can be used as envelope inserts for mailing with quotations, invoices and sales correspondence.

GARDNER SCRATCH THICKNESS GAGE

For measuring the dry thickness of coatings applied to any base such as WOOD, GLASS, METAL, PLASTIC, etc.
Write for description.

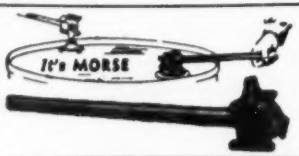
GARDNER LABORATORY, INC.
P. O. BOX 5728 PF
BETHESDA 14, MD.

For more data circle 418 on Reader Service Card

Telephone collect for free brochure on
STRIPPING COPPER
with
McKeon's "Liquid Sulphur"
Economical, fast, non-electrolytic.
Sulphur Products Co., Inc.
McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

For more data circle 419 on Reader Service Card

Send NOW for this FIT-ALL
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



THOUSANDS IN USE saving time, labor, accidents!
SATISFACTION GUARANTEED..... $3.80
Non-sparking type $5.90
Plus Parcel Post
MORSE MFG. CO., Inc.
762 W. Manlius St., E. Syracuse, N.Y.

For more data circle 420 on Reader Service Card

Stevens' job-shop merchandising folder

They also are designed to be used as self-mailers to a mailing list.

The merchandising piece features a photograph of the plating company's Stevens installation, the company's address and phone number. Printed matter stresses the advantages, for the job shop customer, obtained from dealing with a firm offering the advantages available with a Stevens automatic installation.

Plating firms interested in the merchandising folders can obtain further information regarding the program by writing Frederic B. Stevens, Inc., 1800 - 18th St., Detroit 16, Mich.

★ ★ ★

DuBois Co., Inc., manufacturer of industrial cleaning compounds, has opened a Paint Stripping Clinic. The clinic is available for use by industrial plant superintendents and foremen.

DuBois Paint Stripping Clinic offers its laboratory facilities free for special problems and tasks. Plant superintendents and foremen send test panels or work samples to the DuBois laboratories for testing. A report of the findings is then issued. Write DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

★ ★ ★

Hallidie Machinery Company, Seattle, Washington, industrial distributor, has been appointed by **Speed-D-Burr Corporation,** Glendale, California, manufacturer of precision barrel finishing equipment, as technical

Salesmen attending Wyandotte training session. Above, left to right are R. Andrew, Los Nietos, Calif., plant, technical service; P. N. Burkard, manager Industrial, Railroad and Aircraft Department; R. Swanton, Detroit; Jacque Duvall, Los Nietos Research Department; H. Skinner, Research Dept., Wyandotte; G. Clooney, St. Louis; E. O. Eagle, Atlanta; R. Hughes, Export Dept., Wyandotte; J. Sauntry, Chicago; F. MacNamara, St. Louis; J. Tervay, Los Angeles; B. Kumko, Detroit; E. J. Roach, Philadelphia; A. Hannah, Research, Wyandotte; E. J. Kubis, manager, Industrial Sales; D. Snelgrove, Detroit; D. Day, Buffalo; L. R. McCoy, Industrial Research Laboratories; D. Kelly, Research, Wyandotte.

sales and service representative for the states of Washington, Oregon, Idaho, Montana and the territory of Alaska.

★ ★ ★

Kelite Corporation, Los Angeles, manufacturer of industrial chemicals and steam cleaning equipment, has recently held its Spring Sales Management Conference in Phoenix.

Taking part in the conference were all Kelite sales management personnel from the United States, Canada and Hawaii. William Sorensen, executive vice president and director of marketing, presided.

★ ★ ★

Davies Supply and Manufacturing Co., St. Louis, sales representative for electroplating and metal finishing supplies and equipment in the southwest, has received its fourth award from the **Udylite Corp.,** plating products manufacturer, for successfully achieving the annual sales quota of Udylite products in this territory.

Udylite sales manager L. Minbiole (right) presents honor plaque for 1956 to Davies executive vice president E. F. Conroy, Jr., at a recent Udylite sales meeting in Roanoke, Va.

★ ★ ★

"Maximum Automation Potential," an abrasive and abrasive belt machine engineering service, developed by **The Carborundum Company,** gives manufacturers recommendations by mail for improved metal removal methods,

"Buff"de Gook Comes Clean
The plate always streaks and bubbles in this deep groove. We're not getting all the buffing compound out, even tho we dumped the electrocleaner just yesterday.
And only 5 ounces a gallon at 160°? We'll give it a whirl . . . Say. Al, how'd you learn so much about plating?
"To work for Pennsalt, I had to learn not only your problems but the problems of the drawing shop, the paint shop, the porcelain enamel boys, the aluminum fabricators — everybody who uses chemicals on metal."

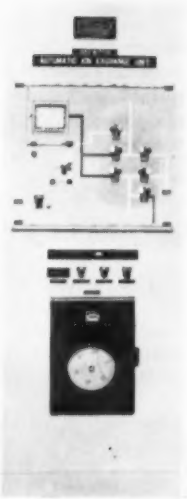
according to an announcement by John Claydon, general manager of the company's Coated Abrasives Division.

Here's how M.A.P. works. The manufacturer writes to The Carborundum Company, Niagara Falls, New York, Attention: M.A.P. Department. By return mail the M.A.P. Brochure is sent to him. He states his problem in the form enclosed in the brochure and mails it to the M.A.P. Department. Coated Abrasive M.A.P. specially trained engineers study the manufacturer's problem, formulate a recommendation, compare costs of the recommended new method with the method currently used and project increased production and savings. The free M.A.P. recommendation is promptly mailed back to the manufacturer for his consideration.

★ ★ ★

One of the displays at the recent Power Show held in the New York Coliseum was a Graver animated automatic Ion Exchange unit.

Displayed at the **Graver Water Conditioning Co.** booth, the unit depicted the various steps involved in the regeneration cycle of a typical ion exchanger. The pipelines were made of colored plastic, each lighted and colored to indicate a different type of flow. Valves were indicated as open or closed by red or green pilot lamps and each step in the process was named by a series of indicating light boxes.



Graver's Animated Ion Exchanger

Gotta hunch. I'll bet Al Pope from Pennsalt can beat this.
I think we can get these shells perfectly clean . . . and save you money besides, by letting you run your tanks cooler. I'll check our Whitemarsh lab.
OK, but hurry, Al.
Two Weeks Later...
Al, your service is as good as your products. We weren't getting anywhere with that buffing gook till I let Pennsalt work on it.

Remember—nobody knows more about metal processing chemistry than Pennsalt. Even if your trouble may not seem to involve your Pennsalt salesman, call him in anyway. Or write

Pennsalt Chemicals

Metal Processing Dept. 429
Pennsalt Chemicals
3 Penn Center
Phila. 2, Pa.

Please send me information on Pennsalt
☐ metal cleaners ☐ phosphate coatings
☐ cold-working lubricants.

Name_____
Company_____
Street_____
City_____ Zone____ State_____

For more data circle **421** on Reader Service Card

Switches and push buttons allowed visiting engineers to operate the unit in a manner similar to that used in plant operation and helped explain the ion exchange process to those who were interested.

HONORS

J. P. Boyce, field service representative for **The Diversey Corporation,** has received a cash award for his outstanding 1956 sales and service performance.

J. P. Boyce

Awards were also given to top salesmen and top rookies in each of the company's eight divisions. They were, in order of salesman and rookie salesman: eastern, J. T. Hardy and L. A. Timm; Cleveland, E. F. Worthington and J. L. Lewis; southwestern, R. P. Casey and S. D. Klein; Pacific, W. E. Judevine and D. B. Murdock; north central, J. A. Rust and D. A. Belau; southern, J. P. Boyce and J. A. Chauvin; east central, C. V. Michalos and W. D. Fitz; central, W. C. Rohn and E. B. Whitebread.

NEW POSITIONS

Chemicals, Metals and Plating Products Division, **Metal & Thermit Corporation,** has recently reassigned a number of sales territories in Michigan, northern Ohio, Indiana, western Pennsylvania and West Virginia.

I. M. Weiss and **L. B. Quirk** will now serve customers in Michigan formerly called on by the late **J. J. Hanney.** Mr. Weiss will operate from Grand Rapids and Mr. Quirk will continue to cover from Detroit other areas of Michigan as well as certain customers in northern Ohio. **Robert Stewart** of M & T's East Chicago office will cover northern Indiana, formerly assigned to Mr. Quirk and Mr. Hanney.

K. D. Ford will continue to operate in northern Ohio, western Pennsylvania and West Virginia, assuming responsibility for additional plating and coating accounts covered up to now by Mr. Weiss. The eastern Indiana area formerly covered by Mr. Ford has been reassigned to **E. W. Rehme** and **J. G. Walker.** Mr. Ford will operate in cooperation with **Frank Haas,** who is responsible for sales of all M & T's Chemicals, Metals and Plating Products in the Pittsburgh-Cleveland area.

★ ★ ★

The appointment of **Charles Van Dusen** to the sales and service department of **Conforming Matrix Corporation,** Toledo, Ohio, has been announced by H. E. MacArthur, president.

"GRIPALLOY"

. . . Attractive satin sheen primer in black and colors . . .
. . . Amazing tight adhesion to 25 different metals as reported by a large electrical manufacturer . . .
. . . Excellent resistance to Salt Spray, Gasoline and Solvents.

TENAX, Newark, N. J.
Lacquers—Enamels
Synthetics—Varnishes

For more data circle **422** on Reader Service Card

SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.
Solvents recovered by the Lofgren Process. Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. *Write to:*

Solvents Recovery Service, Inc.
1025 Broad St. **Newark 2, New Jersey**
Hammond Solvents Recovery Service
241 Brunswick Rd. **Hammond, Ind.**

For more data circle **423** on Reader Service Card

OLD FRIENDS MAKING NEW FRIENDS.

Copper and Nickel have been brought up together in the plating field. They plate, deposit, and alloy together—they are OLD FRIENDS.

TRIANGLE BRAND COPPER SULPHATE and TRIANGLE BRAND NICKEL SULPHATE as principal sources of copper and nickel in the plating field, are making NEW FRIENDS every day.

The reasons are obvious — purity, solubility, uniformity and high conductivity of their solutions result in QUALITY PLATING.

All-important "extras" found in the use of Triangle Brand Copper and Nickel Sulfates yield long-life plating performance that MAKES THE DIFFERENCE.

Specify: **Triangle Brand Copper Sulfate and Triangle Brand Nickel Sulfate for dependable plating baths.**

PHELPS DODGE REFINING CORPORATION · NICHOLS · TRIANGLE BRAND · CHEMICALS · NEW YORK, N.Y.

PHELPS DODGE REFINING CORP.

300 PARK AVE. NEW YORK 22, N.Y. • 5310 W. 66th STREET, CHICAGO 38, ILL.

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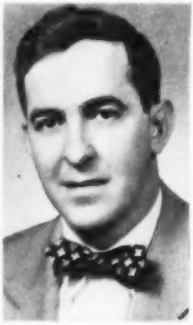
Mr. Van Dusen had been in the manufacturing and experimental departments of the company.

John W. Decker



James W. Erwin

Willis J. Stoddard

Neilson Chemical Co., Detroit, Mich., has appointed several new sales and service representatives.

Willis J. Stoddard will represent the company in the Detroit and Michigan area. Mr. Stoddard heads the recently formed alkali sales division of Neilson Chemical Company.

John W. Decker will represent the company in eastern Pennsylvania and eastern New York, including New Jersey, Maryland and Delaware.

James W. Erwin has been appointed sales and service representative for Neilson in western Pennsylvania and southwestern New York.

★ ★ ★

Appointments of **George P. Myers** as manager and **John A. Burke, Jr.,** as sales manager for the Suydam Division of **Pittsburgh Plate Glass Company** have been announced by C. R. Fay, vice president, paint and brush division.

Mr. Myers, sales manager for the Suydam Division during the past two years, succeeds Stuart Brown, Jr., who has retired.

Prior to his appointment Mr. Burke had served as assistant director of sales, transportation finishes, in the company's general office.

Mr. Brown served as vice president of the M. B. Suydam Company until 1946, when it became a division of Pittsburgh Plate. He was named sales manager at that time for Pittsburgh Plate's new Suydam Division and since 1953 has served as divisional manager.

★ ★ ★

The Harshaw Chemical Co. has announced two promotions. **William A. Harshaw II,** grandson of the founder, and son of Chairman W. J. Harshaw, has been elected vice president of research, and **Leslie N. Smith** has been named vice president of the Scientific Division.

Mr. Harshaw joined the company in 1944 in research and sales. He became sales manager of the development department in 1951 when he also was named assistant secretary. In 1953 he was promoted to manager of the Philadelphia branch. He will now make Cleveland his headquarters.

Mr. Smith, who joined Harshaw in 1919, has handled a varied group of assignments in the laboratory, in Cost Accounting and as manager of the General Sales Office. He has long been active in sales and development in the field of metal electroplating. He was prominent in the pioneering of advanced types of nickel anodes and bright nickel plating processes. In 1951 Mr. Smith was appointed general manager, Scientific Division and he will continue to be in charge of this division.

★ ★ ★

Appointment of **Charles L. Fuelling** to the technical sales staff of **Diamond Alkali Company's Chromium Chemicals Division** has been announced by E. L. Combs, supervisor of Chromic Acid Sales.

Widely known in the electroplating and metal-finishing industry, Mr.

Fuelling comes to the Diamond organization from Detrex Chemical Industries, Inc., Detroit, where he has been engaged in technical service work on phosphates and alkali compounds for the past two years.

Charles L. Fuelling

Charles W. Wheeler

Charles W. Wheeler, Glenview, Illinois, has been appointed to manage solvent sales for the Chlorinated Products Division of **Diamond Alkali Company,** Cleveland, Ohio.

Mr. Wheeler will be responsible for sales of Diamond solvents produced at Painesville, Ohio; Belle, West Virginia, and Houston, Texas. These chemicals include perchlorethylene, carbon tetrachloride, ethylene dichloride, fire extinguisher fluid, chloroform, methyl chloride and methylene chloride.

★ ★ ★

The **Carborundum Company's** Board of Directors has elected five vice presidents: **Niles C. Bartholomew, Gene DeMambro, I. Wendell Hamm, Joseph S. Imirie,** and **Leslie E. Simon.**

Mr. Bartholomew, formerly vice president of the subsidiary Carborundum Metals Company, Inc., which manufactures reactor materials zirconium and hafnium, will continue as general manager of Carborundum Metals Company, which is now designated a division of the company.

Mr. DeMambro, since 1946 president of Curtis Machine Corporation, which manufactures abrasive belt machines in Jamestown, New York, continued as its president when it was made a subsidiary of Carborundum in 1955. Curtis Machine is now designated a division of The Carborundum Company. Mr. DeMambro will be general manager of the division.

Mr. Hamm will continue to direct the activities of the Manufacturing Division of the Functional Staff.

Mr. Imirie will continue as general manager of the Electro Minerals Division, which manufactures crude abrasives, abrasive grain and powders, tumbling nuggets, metal additives, other electric furnace products.

Leslie E. Simon (Major General, U. S. Army, Retired), who came to Carborundum in January, 1956, as director of Research and Development, will continue to be director of this division, which has its central laboratories in Niagara Falls, New York.

TRAINING COURSES

A **Class in Electroplating** has been organized and sponsored by the **St. Joseph Valley Branch** of the **American Electroplaters' Society.** The class is conducted in a classroom made available by Bendix Products Div., South Bend, Indiana. **Dr. Harold J. Wiesner** is the instructor.

Dr. H. J. Wiesner

An elementary lecture course in plating fundamentals of chemistry, electricity, and electrochemistry is now being conducted. An advanced course is being planned for the Fall semester.

The class has attracted 52 students, all of whom are engaged in the electroplating industry in the South Bend industrial area. A higher registration fee is charged non-members of the

A.E.S. than that charged to members. This has resulted in a substantial increase in membership for the St. Joseph Valley Branch, and presents an interesting possibility for other branches. This stipulation can be made, since the St. Joseph Valley Branch is sponsoring the course completely, paying the instructor, and accepting full financial responsibility for the success or failure of the enterprise.

This is the second class in electroplating to be organized in Indiana this year. The other was established in Indianapolis, with Dr. A. M. Max as instructor.

★ ★ ★

Popularity of the **DeVilbiss Company's** training school has grown so much that additional quarters have had to be provided. The new classroom and laboratory will be ready for forthcoming spring classes, and an additional course for Contract Painters and Maintenance men has been scheduled to start April 29.

Classes are now being filled for the following starting dates: April 1, May 6, June 3, July 15, August 5 and 26 and September 16. Applications should be made immediately for all of these tuition-free sessions. The only cost to enrollees is for transportation, board and room. Information is available through any DeVilbiss representative or directly from the DeVilbiss Company, Toledo 1, Ohio.

Nancy Nagel, DeVilbiss office worker, demonstrates proper way to hold an extension spray gun during painting of company's expanded training school for spray painters.

MEETINGS

The Pittsburgh Branch of the American Electroplaters' Society will hold its annual "Ladies Night" Dinner and Dance on Saturday, April 27, at the Gateway Plaza Main Dining Room.

The program includes a steak dinner, dancing, door prizes and favors for the ladies. Tickets are $7.50 per person.

Frank Mountain

Robert Burford

The co-chairmen, Bob Burford of Pennsalt Chemicals and Frank Moun-

tain of Hanson-Van Winkle-Munning Co., invite all those who are interested to attend. Reservations should be made with either Mr. Burford, Mr. Mountain or Myron Ceresa, president of the Pittsburgh Branch. Mr. Ceresa may be reached at Westinghouse Electric Corporation.

SOCIETIES

The Department of Commerce has announced that it will form an **Electroplating Industry Advisory Committee** on which job platers will be represented.

John Palik, Jr., president of the National Association of Metal Finishers, job shop owners organization, has submitted a list of names of jobshop operators to BDSA to serve on the important Advisory Committee.

NECROLOGY

George L. Nankervis, prominent in the metal finishing industry for over 35 years, passed away suddenly on February 13 at the age of 59. He was founder and president of the **George L. Nankervis Company,** well known for engineering and installation of electroplating facilities.

George L. Nankervis

Mr. Nankervis' career in the industry began in 1922, in Detroit, as a manufacturer's representative, handling many of the well known lines of equipment and supplies. He was active in the industry and did much to advance the science of mass production electroplating. He was a sustaining member of the American Electroplaters' Society and a past president of the Metal Finishing Suppliers Association. In 1947 he was general chairman of the AES Convention and Industrial Finishing Exposition, held in Detroit.

★ ★ ★

John T. Edgerly, staff assistant in the automotive refinish sales organization of the **Du Pont Company's** Fabrics and Finishes Department, died Mar. 3 in Indiana Hospital, Indiana, Pa. Mr. Edgerly, who was 63 years old, suffered a heart attack on February 23.

MEETINGS of INTEREST to FINISHERS

Apr. 24-25. Annual Meeting, Lead Industries Association, Drake Hotel, Chicago, Ill.

Apr. 25-26. 39th Annual Meeting, American Zinc Institute, 36th Meeting, Galvanizers' Committee, Drake Hotel, Chicago, Ill.

Apr. 27. Milwaukee Branch Annual Meeting, Schroeder Hotel, Milwaukee.

Apr. 27. Symposium, "Important Engineering Considerations in the Plating Room," Milwaukee Branch, A.E.S., Hotel Schroeder, Milwaukee.

Apr. 27. Annual Meeting, Pittsburgh Branch, Gateway Plaza Main Dining Room, Pittsburgh, Pa.

Apr. 27. 18th Annual New England Regional Meeting, Hotel Statler, Hartford, Conn.

Apr. 27. Third Empire State Regional Meeting, A.E.S., Grand Ballroom, Onondaga Hotel, Syracuse, New York.

May 4. 21st Annual Banquet and Technical Session, Boston Branch, A.E.S., Hotel Statler, Boston, Mass.

May 11. 39th Annual Banquet, Masters' Electro-Plating Association of New York, Plaza Hotel, New York.

May 12-16. Electrochemical Society Meeting, Statler Hotel, Washington, D. C.

May 13-15. 12th Purdue Industrial Waste Conference, Purdue Memorial Union Building, Purdue University, Lafayette, Ind.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

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PRODUCT LITERATURE

36. Cold Stripper
Information on a cold stripper that removes photo-resist coating from circuit board in 15-30 seconds. Material is nonflammable, non-toxic, requires no heat or current. Sample available. Allied Finishing Specialties Co., 2641 W. Grand Ave., Chicago 12, Ill.

37. Vacuum Metalizing Equipment
Bulletin shows various models of vacuum coaters. Consolidated Electrodynamics, Rochester Div., Rochester 3, N. Y.

38. Cutting Barrels
Literature on Triple-Action Cutting Barrels. Hartford Steel Ball Co., Inc., 14 Jefferson Ave., West Hartford 6, Conn.

39. Bright Nickel
Information on Mirro-Glo, an addition agent for adding lustre to articles plated in still tanks. Lea Manufacturing Co., 16 Cherry Ave., Waterbury 20, Conn.

40. Fume Elimination
Information on the catalytic oxidation process for removing fumes and at the same time recovering heat. Oxy-Catalyst, Inc., Industrial Div., Wayne, Pa.

41. Automatic Buffing
Data on automatic machines for buffing, polishing and deburring. The Packer Machine Co., Meriden, Conn.

42. Specialized Coatings
Information on a custom-formulating service that can aid in solving paint-finishing problems. Watson-Standard Co., 225 Galveston Ave., Pittsburgh 30, Pa.

43. Abrasive Belt Operations
Maximum Automation Potential brochure explains new, free engineering service of the Carborundum Company. M-A-P is a method devised by Carborundum to predict performance of abrasive belts on any metal removal operation (except snagging operations) in advance. Coated Abrasives Div., The Carborundum Co., Niagara Falls, N. Y.

44. Spraying Plastisols
Data Sheet No. 3 gives helpful hints on spraying plastisols for protective and decorative coatings. Stanley Chemical Co., Dept. D, 1468 Berlin St., Subsidiary of The Stanley Works, East Berlin, Connecticut.

45. Barrel Finishing
A 20-page booklet on the Roto-Finish method of mechanical finishing fully explains process, its applications and advantages. Has section on "How to Achieve Best Results with Roto-Finish." Roto-Finish Co., 3704 Milham Rd., Kalamazoo, Mich.

46. Pressure-Feed Tanks
Catalog 9 gives complete specifications for a line of pressure-feed material tanks that are used for supplying paint under pressure to spray guns. Paasche Airbrush Co., 1909 W. Diversey Parkway, Chicago 14, Ill.

47. Replaceable-Element Immersion Heaters
Folder describes and illustrates, gives installation recommendations for Pyrosil fused-silica immersion heaters. Pyrosil, Inc., Cuyahoga Falls, Ohio.

48. Abrasive Belt Machinery
Bulletin 324 describes various models of abrasive belt machines for grinding and polishing. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

49. Pre-Cut Masks
Bulletin 160-C contains specifications, application data, and other information on pre-cut masks for selectively protecting areas during painting operations. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wis.

50. Plating Processes and Equipment
Bulletin 1J gives characteristics of various Udylite plating processes: nickel processes; cadmium; bright zinc; and bright copper. Also describes full automatic plating machines; barrel plating equipment; electrical equipment; and semi-automatic plating machines. The Udylite Corp., Detroit 11, Mich.

51. Ultrasonic Cleaning
Information on ultrasonic cleaning equipment for removing difficult soils from small parts that must be completely clean. Branson Ultrasonic Corp., 26 Brown House Rd., Stamford, Conn.

52. Organisols and Plastisols
Information on plastisols and advantages of using these coatings as a protective coating on articles subjected to wear, chemical exposure and abuse. In "clear" and a full range of colors. Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.

53. Buffing Compounds
Descriptive catalog of bar, liquid and tube-type buffing compounds. Formax Mfg. Corp., Detroit 7, Mich.

54. Radiant Heat
A 20-page booklet entitled "Radiant Heat—Applications Unlimited." Fostoria Pressed Steel Corp., Dept. 422, Fostoria, Ohio.

55. Automatic Polishing Machinery
Information on rotary, straight-line, semi-automatic and special polishing and buffing machinery. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20 (Ferndale), Mich.

56. Barrel Finishing Equipment
Catalog shows complete line of barrel finishing equipment, accessories, supplies. Grav-I-Flo Corp., Dept. PF-4, 400 Norwood Ave., Sturgis, Mich.

57. Polishing and Buffing Compositions
Data on a variety of buffing and polishing compositions: stainless steel compositions; tripoli; chrome coloring compositions; greaseless compositions; plastic buffing compositions; emery cakes; aluminum coloring compositions; and others. Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

58. Hammer Finishes
Information on Dayco baking and air-dry hammer finishes. James B. Day & Co., 1872 Clybourn Ave., Chicago 14, Ill.

59. Silicone Finishes
Brochure gives complete data on silicone finishes. Contains a list of silicone paint formulators. Dept. 5016, Dow Corning Corp., Midland, Mich.

60. Finger Buffs
Catalog describes and illustrates a complete line of finger buffs—sisal and cloth. Gives information on choosing the right buff for a specific application. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

61. Vapor Degreasing
A 42-page illustrated book gives valuable technical information on all phases and types of vapor degreasing operations. E. I. duPont de Nemours & Co. (Inc.) Electrochemicals Dept. PF-4, Wilmington 98, Del.

62. Barrel Finishing Equipment, Supplies
A 20-page booklet describes barrel finishing machines; separating and handling equipment; deburring media; balls and shapes; compounds; and experimental services. Globe Div., Casalbi Co., 546 Wayne St., Jackson, Mich.

63. Film Thickness Gage
Literature describes Film Gage Type 255-A, which measures film thickness of most plated non-magnetic metals; non-conductive coatings such as anodic films; non-magnetic films on non-magnetic bases. Instrument is also useful in sorting or matching metals. Boonton Radio Corp., Boonton, N. J.

64. Degreasing Solvent
Information on Blacosolv, a stabilized degreasing solvent that is said to have good resistance to heat, light and air. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

65. Contact Wheels
Catalog describes and illustrates plain and serrated contact wheels that are available in various durometers. Chicago Rubber Co., Inc., 651 S. Market St., Waukegan, Ill.

66. Rhodium Plating Solutions
Information on rhodium plating solutions and their applications: protection from corrosion in air or under unusual conditions; printed circuits; and for contact surfaces. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

67. Cleaner
Technical Bulletin describes Cowles QC Washing Machine Cleaner, its applications and advantages (thorough dispersion, less foaming). Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

68. Better Painted Products
Full particulars on Paintbond, a material that is applied directly to the metal before painting to produce a crystalline coating that helps to give a stronger bond to the paint. Detrex Chemical Industries, Inc., Box 501-c, Detroit 32, Michigan.

69. Dust-Free Finishes
Information on specially treated cloths that are useful in removing dust and particles from surfaces immediately before painting. Detro Sales Co., Inc., Culver City, Calif.

70. Barrel Finishing Book
A 52-page book describes and illustrates barrel finishing processes and techniques. Includes detailed cost chart on finishing of typical parts. Almco Div., Queen Stove Works, Inc., 84 Marshall St., Albert Lea, Minn.

71. Centerless Buffs
Information on the advantages of using American Buff's patented centerless buffs. American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

72. Cleaning Compound
Information on Apex 749, a cleaning compound designed for use in spray washing machines for removal of chlorinated and pigmented drawing lubricants. Apex Alkali Products Co., Main and Rector Sts., Philadelphia 27, Pa.

73. Keep Baths Clean
Technical data on the use of Darco, an activated carbon developed specifically for removing impurities from plating solutions. Chemicals Div., Atlas Powder Co., Wilmington 99, Del.

74. Airless Spray Painting
Facts on the latest developments in the Bede Airless Spray process. Bede Products Corp., Jackson St., Dept. 1, Amherst, Ohio.

75. Buffs
Information on air-cooled Ventex Buffs with permanent or removable centers. Bison Corp., 1935 Allen Ave., S.E., Canton, Ohio.

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76. Tack Cloth
Specially treated cloths aid in removing lint and dust from metal surfaces just prior to painting. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

77. Paint Stripping Information
A booklet, explaining the latest methods and applications for hot and cold paint stripping as used in removing enamels, epoxies, japans, lacquers, varnishes and other organic finishes. DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

78. Phosphate Coating
Literature reports advantages of using Divobond iron phosphate coating. Metal Industries Department, The Diversey Corporation, 1820 Roscoe St., Chicago 13, Ill.

79. Electropolishing Solutions
Full details on electropolishing solutions for copper alloys, stainless steel, carbon steel and less common metals and alloys. Electro-Glo Co., 1430 S. Talman Ave., Chicago 8, Ill.

80. Electroplating Products and Processes
Enthone "Check List" lists literature that is available on more than 60 products and processes for electroplating and metal finishing. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

81. Germanium Plating Rectifiers
Bulletin GED-2934 describes new line of automatic germanium plating rectifiers. General Electric Co., Section 463-15E, Schenectady 5, N. Y.

82. Cleaning Metal
Information on cleaning metal with formulations containing Dow caustic soda and sodium orthosilicate. The Dow Chemical Co., Dept. AL608L, Midland, Mich.

83. Chemical Polishing Aluminum
Details of a process that chemically polishes any shape of aluminum to a satin or mirror-bright finish. Alchemize Corp., 1436 S. Talman Ave., Chicago 8, Ill.

84. Industrial Chemicals
A 20-page booklet lists chemicals useful in the finishing industry supplied by Harshaw Chemical Co., includes photographs and descriptions of some of the company's manufacturing, laboratory and distribution facilities. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

85. Pumps
Catalog contains descriptions of pumps lined with neoprene, Saran, Hypalon and Hycar. Sizes up to 450 g.p.m. Includes heat, g.p.m. and efficiency graphs. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

86. Electroplating Course
Information on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 12F, Pa.

87. Baking Ovens
Catalog describes and illustrates a complete line of baking ovens. Lanly Co., 760 Prospect Ave., Cleveland, Ohio.

88. Cleaning Methods
Handbook of production-line cleaning methods for various applications. Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

89. Buffing and Polishing Equipment
Information on new and used buffing and polishing equipment. J. Holland & Sons, Inc., 485 Keap St., Brooklyn, N. Y.

90. Save the Nubbins
Information on McAleer's service of remelting and recasting buffing compound nubbins into uniform bars. McAleer Manufacturing Corp., 101 S. Waterman, Detroit 17, Mich.

91. Corrosion-Resistant Linings
Literature describes advantages of using Miccrosol E-1003 as a coating for tanks, ducts and other equipment. Michigan Chrome & Chemical Co., 8615 Grinnell Ave., Detroit 13, Mich.

92. Flow Coating System
Bulletin contains descriptions of Newcomb-Detroit flow coating systems. Newcomb Detroit, 5761 Russell St., Detroit 11, Mich.

93. Rust Remover
Pamphlet describes Oakite Rustripper, a material that removes rust, heat scale, and oils. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

94. Cold Degreasing Solvent
Data Sheet No. SS-195 describes improved cold degreasing solvent that is said to be less toxic and have greater stability. Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y.

95. Why Hot Spray?
Booklet explains advantages of using hot-spray process. Spee-Flo Corp., Dept. PF-28, 720 Polk Ave., Houston, Texas.

96. Automatic Barrel Plating
Information on equipment for automatic barrel plating process. Frederic B. Stevens, Inc., 1804 Eighteenth St., Detroit 16, Mich.

97. Liquid Buffing Compound
Data on the advantages of using Liquispray Buffing Compound. Stutz Company, 4410 Carroll Ave., Chicago 24, Ill.

98. Stripping Copper
Technical information on stripping copper with Liquid Sulphur is given in a brochure. Sulphur Products Co., Inc., McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

99. Bright Brass
Technical bulletin on the True Brite brass plating solution. True Brite Chemical Products Co., Box 31, Oakville, Conn.

100. Thickness Tester
Brochure and questionnaire help to solve thickness testing problems. Unit Process Assemblies, Inc., 61 E. Fourth St., New York 3, N. Y.

101. Abrasive Wet Blasting
Bulletin 1403 describes advantages of using Pangborn Hydro-Finish system for deburring and surface finishing. Pangborn Corp., 4900 Pangborn Blvd., Hagerstown, Md.

102. Addition Agent
Technical information on Proglo 100, a cyanide zinc addition agent in powder form for barrel, still, semi- and full-automatic plating. Promat Div., Poor & Co., 851 S. Market St., Dept. PF-3, Waukegan, Ill.

103. Electrostatic Spraying
Brochure contains case history examples of large and small installations where electrostatic spray is being used advantageously. Ransburg Electro-Coating Corp., Indianapolis 7, Ind.

104. Clean Small or Large Parts
Information on the Ransohoff Combination Drum-and-Conveyor-Type Cleaning Machine, which is set up to clean parts in tote pans as well as larger parts, in a conveyorized operation. Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

105. Cleaning and Burnishing Compounds
Bulletin H-3 describes a line of cleaning, burnishing and tumbling compounds. Rutley Industries, Inc., 415 Greenwich St., New York 13, N. Y.

106. Filters
Information on the Sethco LSIN-20V self-priming filter, which removes particles down to one micron from solutions of pH O-14. Sethco Mfg. Co., 70-72 Willoughby St., Brooklyn 1, N. Y.

107. Chromate Conversion Coatings
Literature on a complete line of chromate coatings for use on zinc, cadmium, copper, brass, bronze, aluminum alloys, magnesium alloys and silver. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

108. Acrylic Finishes
Information on acrylic finishes. Varnish Products Co., 5204 Harvard Ave., Cleveland, Ohio.

109. Protecting Aluminum
Bulletin 1424 describes various types of ACP Alodine, gives information that is helpful in selecting the proper type for a particular application. American Chemical Paint Co., Ambler 14, Pa.

110. Highly Polished Surfaces
Data on producing mirror-bright finishes with Paramount Felt Wheels and Bobs. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

111. Keeping Spray Booth Walls Clean
Literature tells how to keep spray booth walls clean with Liquid Envelope strip-coating. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

112. Plastic Equipment
Bulletin F-7 describes Haveg plastic fume ducts, hoods, fans and fittings. Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Del.

113. Ovens
"Ovens for Industry" catalog describes complete line of industrial ovens. Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

114. Industrial Finishes
Information on clear transparent paint finishes. G. J. Nikolas & Co., Inc., 2880 Washington Blvd., Bellwood, Ill.

115. Chainless Conveyor
Bulletin LS-1 describes and illustrates use of Landahl Chainless Conveyors in the finishing industry. The Landahl Conveyor Co., 13142 Athens Ave., Cleveland 7, Ohio.

116. Automatic Plating Machine
Illustrated catalog describes Daw Junior Fully Automatic Plating Machine. Lasalco, Inc., 2820 LaSalle St., St. Louis 4, Mo.

117. Complete Finishing Systems
Catalog A-657 describes paint finishing equipment and integrated, conveyorized pretreating and finishing systems. The R. C. Mahon Co., Detroit 34, Mich.

118. Chromium Plating
Bulletin SRHS-3 gives detailed technical information on Metal & Thermit's "self-regulating" chromium plating process. Metal & Thermit Corp., Rahway, N. J.

119. Fluid Pump
Folder illustrates and describes Model P-6 1½-to-1 ratio transfer and supply pump, which is used for transporting liquid materials through pipe lines or hoses. Balcrank, Inc., 42 Disney St., Cincinnati 9, Ohio.

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120. Panel Heater
Form CEC-56 contains 15 pictures of the Dean Thermo-Panel Coil. Describes applications: for heating large cylindrical tanks from the outside; for heating square tanks from both the outside and inside. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, N. Y.

121. Reverse Current Cleaners
A series of alkaline cleaners for reverse current cleaning of zinc-base die castings is described in Technical Data Sheet No. 2, a three-page usage and instruction sheet. MacDermid Inc., Waterbury 20, Conn.

122. Drum Rotator
Bulletin No. 1156 describes Morse Model 1-5154VS ½-h.p. Stationary Drum Rotator. Shows how rotator agitates, blends and tumbles. Morse Manufacturing Co., Inc., 762 W. Manlius St., East Syracuse, N. Y.

123. Automatic Spray-Finish Machine
An illustrated catalog covering basic types of automatic transverse spray finishing machines. Transverse machines of four types are covered: horizontal straight line, horizontal contour, vertical straight line and vertical contour machines. Models and specifications of the horizontal and vertical straight-line types are included, as well as typical uses. The DeVilbiss Company, Toledo 1, Ohio.

124. Paint Pumps
Catalog has complete information on a line of paint pumps. Alemite Div., Stewart-Warner Co., Dept. D-27, 1850 Diversey Parkway, Chicago 14, Ill.

125. Vacuum Metalizing Coils
Booklet "Sylvania Tungsten Coil Products" contains useful information on vacuum metalizing heater source coils. Sylvania Electric Products Inc., Tungsten and Chemical Div., Towanda, Pa.

126. Vapor Degreaser
Literature on a compact vapor degreaser that can be used for cleaning batches of small parts. Tect, Inc., Dumont, N. J.

127. Immersion Heaters
Literature on vitreous silica immersion heaters, designed for service in plating and pickling solutions. Thermal American Fused Quartz Co., Inc., 18-20 Salem St., Dover, N. J.

128. Hot Spray
Information on the Therm-O-Spray Hot Spray Unit. Thermospray Co., Inc., 103 Park Ave., New York 17, N. Y.

129. Selenium Rectifiers
Information on Walker Selenium Rectifiers. Walker Div., Norma-Hoffmann Bearings Corp., Stamford, Conn.

130. Roof Ovens
Information on space-saving installation of ovens on plant roof tops. Peters-Dalton, Inc., 17908 Ryan Rd., Detroit 12, Mich.

131. Rubber Gloves
Industrial glove catalog describes and illustrates complete line of gloves for use in various types of industrial services. Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio.

132. Germanium Rectifiers
Catalog shows complete line of germanium rectifiers said to operate at 95 per cent efficiency at full load. Rapid Electric Co., 2881 Middletown Rd., Bronx 61, New York.

133. Recirculating Ovens
Catalog contains information on recirculating ovens of various sizes and types. W. S. Rockwell Co., 2907 Eliot St., Fairfield, Conn.

134. Electrostatic Spray Equipment
Information on patented "Ionic" electrostatic spray guns for applying paint electrostatically. Scientific Electric, 105-119 Monroe St., Garfield, N. J.

135. Solvents
Data on sources of supply for all types of solvents. The Solvents and Chemicals Group, 2540 W. Flournoy St., Chicago 12, Illinois.

136. Spray Nozzles
Catalog 24 contains 48 pages of information on thousands of nozzle types and capacities. Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

137. Metal Pretreatment
Folder on the Metacote process, which cleans, rustproofs and phosphatizes in one operation. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

138. Polishing Hand Tools
Booklet entitled "Grinding and Polishing Hand Tools" tells how to grind and polish hand tools efficiently with abrasive belts. Minnesota Mining & Mfg. Co., Dept. FH-47, St. Paul 6, Minn.

139. Tool Maintenance
Reprint of an article entitled "New Life for Small Tools—Rehabilitation Treatment Cuts Resharpening 50%." The Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

140. Flow Coating
Information on flow coating equipment. George Koch Sons, Inc., Evansville 4, Indiana.

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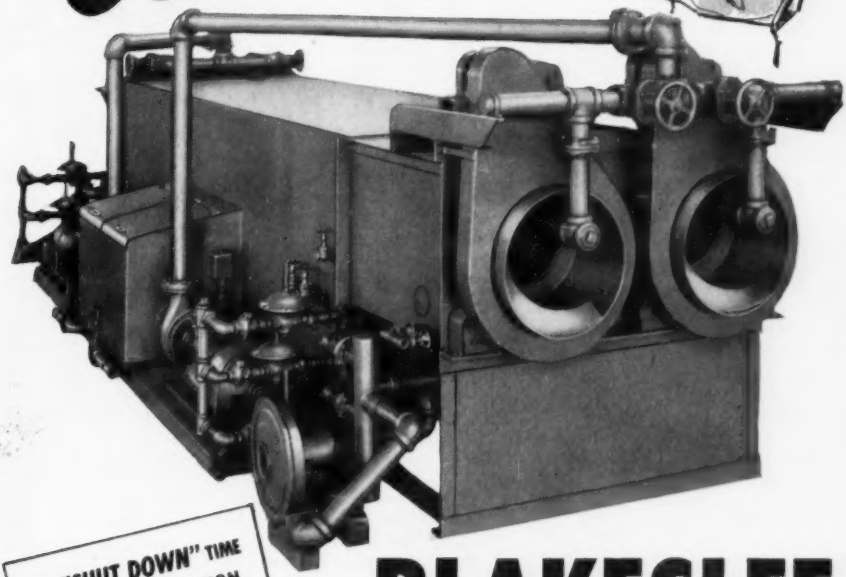

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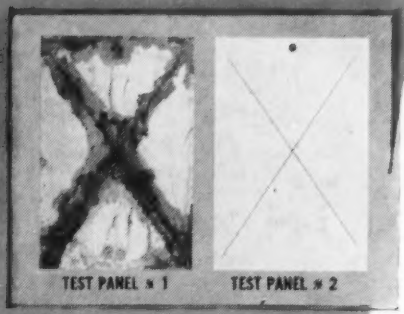

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